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THE JOURNAL OF THE Textile Trades of Canada.

Vol. XV. TORONTO AND MONTREAL, FEBRUARY, 1898. No. 2

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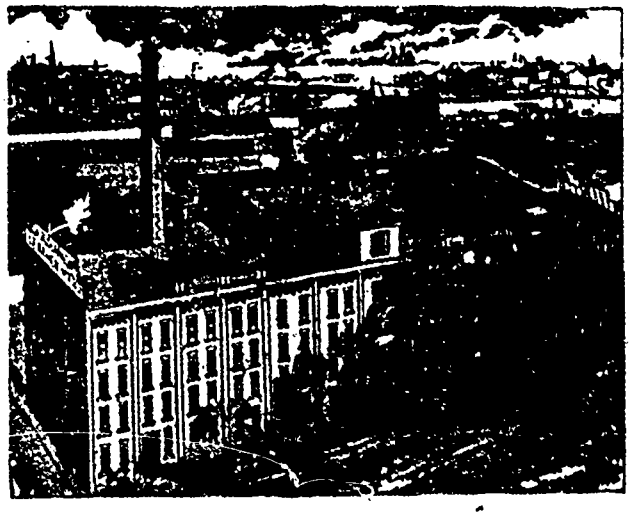

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Canadian Journal of Fabrics

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Editorial.

The Almonte Weavers.

When describing the mills of the Rosamond Woolen Company, at Almonte, Ont., in the issue of the CANADIAN JOURNAL OF FABRICS, January, 1896, we took occasion to thus refer to the workers in that busy hive of industry. "A large number of them who have been employed by the company for a long period own their own houses, and this is true not only of the men, but there are also property-holders among the women. The ordinary system of hiring people for what their work is worth, and discharging them when incompetent or wasteful, is followed, and there is absolutely no labor question in the town, nor has there been at any time. There is no labor union, nor has there ever been a strike, lockout, or any disturbance or trouble among the working people. In many cases the employees in the mill to day are children and grandchildren of those who were in the mill forty years ago. Some time ago a system of profit-sharing among the employees was undertaken by the management, but as it was found to be *unsatisfactory, the old system* was restored. A number of those employed in the more responsible positions in the mill are stockholders to a small extent." January, 1898, however, has seen the addition of another chapter to the history of the mill, and that too in quite another vein. On Jan. 27th the company posted a notice in the weave room of a readjusted scale of wages, which the employees claimed meant a reduction of ten per cent. in their pay, and so struck. The weavers, about eighty in all, went out on strike within an hour of the posting of the new wage schedule.

Facts of the Strike.

We believe the management of the mill have been considering for some time the scale of wages paid for weaving. The old way was a fixed price per yard for every 20 picks per inch, and this system has been discarded by most mills as being unfair to not only the weavers but also the employer. The system in use, generally, is a giving a larger price per yard than the old scale, on goods which have a smaller number of picks per inch, and decreasing the amount proportionately as the number of picks per inch increases. The management also claims that the Rosamond Woolen Co. has been paying more for weaving during past years, than any other mill of its class in the country. However, the sliding scale of wages which has just been adopted is very similar, and to all intent the same as other concerns in Canada making the same class of goods—in fact, the scale of these mills was the basis of the recent change, we are assured. When the scale was posted up in the weave room, the weavers did not take time to consider it properly, but after a short consultation with the manager after the scale was posted, went out. Of course, they have acknowledged since that they made a mistake in acting so quickly, without having the figures thoroughly before them, as the manager had promised them on the first day they struck, that if any injustice could be proven in the scale, he would look over it the next day and do what he could to rectify it. The

strikers came back to work in the morning, but as the manager had not made any change they marched out again, without naming any particular injustice. After many assertions as to the reduction in the pay which the new scale would mean, they finally invited the manager to a conference, and the matter was settled. The figures had been before this revised somewhat and a few changes made, but not to any great extent. It was shown to the operators that the reduction would not average more than one dollar per loom, on the basis of the actual pay for December, and they agreed to return if pay-day was fortnightly, instead of monthly as formerly. This was agreed to by the company. A curious fact in the strike was that under the new scale some twenty-three weavers would have had a larger pay for December if thus figured, but this did not appear to have any weight with the strikers. However, the main point is that by adopting the new scale the company claims that it is paying practically the same rates as its competitors in the manufacturing of the particular class of goods produced, and that to keep on paying more than their competitors was out of the question. The difference on the new scale as first put up and as revised was very slight.

The Right Color.

There has been a good deal of speculation as to what would be the new shades introduced in cheviots for autumn, 1898. The various shades of browns and greens have had the changes rung on them so much during the past few seasons as to be almost done to death, and manufacturers are exercising their wits and ingenuity to evolve something new. An exceedingly well-informed contemporary, the *Textile Mercury*, Manchester, Eng., says that there is evidence that the best West End of London houses will favor for Cheviot suitings a mixture composed of dark olive and green, in the proportion of about 75 per cent. olive to 25 per cent. or even less of green of a medium shade for warp and weft. This gives a cheery-looking slate mixture. The dullness of this combination is relieved by a thread of black and red twist in warp and weft which forms a check about an inch and a half. A better effect still is produced by threads of the twist placed so as to form a double check. The weave, as usual, is either plain or two and two twill.

SOAPS AND ALKALIES.

The quality of modern textile dyeing and finishing being so potent a factor in the success or failure of a mill, the tendency to look more critically into the quality of raw materials purchased daily engrosses more of the attention of the progressive and conscientious dyer or finisher, writes Aron Hamburger, in the *Textile Colorist*. In a rather extended practical experience with mill work, as well as in the manufacture of mill chemicals, etc., the writer has almost invariably been able to trace most of the difficulties experienced in either dyehouse or finishing room to either adulteration or faulty manufacture of dye stuffs, soaps, oils, etc., purchased for the various processes incident to textile manufacturing.

The soap question, on account of an active and not always scrupulous competition, is a most vexatious one always, as during stress of low prices and little demand for textile goods, cheap soaps, which, however, are cheap in price only, have to too great an extent crowded out the better grades of textile detergents, but the general resumption of work in American mills is gradually and surely causing a revulsion of feeling in favor of honest soaps and pure alkalies. This is a natural result of costly but valuable experience which has often attended this worship of "false gods" in the shape of low priced material. For wool scouring, fine woolen and worsted yarn scouring, worsted and mohair piece scouring, and the washing and finishing of woolen and worsted knitted fabrics, potash soaps, made preferably of olive oil, are daily coming into more encouraging prominence. This is true despite the fact that the experience of many manufacturers with the so-called "potash" (?) soaps of many soap dealers, has not been fruitful with the promised or expected improvement in the condition and feel of the fiber or fabric, and consequently such experiments have only resulted in increased cost of scouring, etc., caused a return to soda and soda soaps, which at any event are cheap and not distinctly harmful to the goods.

Taking as a basis for a fresh plea in behalf of potash scouring for soft finish, the acknowledged superiority of potash over soda, for the acquisition of fine finish, the writer would emphasize once more the value and necessity of careful investigation into the composition of all soaps, alkalies, etc., purchased for textile use. In grounding himself in the many easily managed tests for adulterants, which a slight familiarity with chemical reactions would place within his reach, the dyer or finisher could in many instances undertake the qualitative analysis of his own supplies. Where this is impracticable, the small expenditure necessary to have analysis performed by an experienced chemist, who would be able to furnish with his analysis a practical and intelligent report on the comparative practical value of samples submitted, would in the course of a year save many times its cost. In many cases low-priced textile soaps masquerading as potash compounds are merely soda soaps extended or diluted with water, and as no appreciable difference can be noted in finish, and they are found to cost more money to use than a straight dry soda soap, the potash idea is often abandoned in disgust through the fault of cupidity on the part of a few unrepresentative soap makers, who, on the plea of low prices, often gain a foothold at the expense of their more conscientious competitor.

Besides these bogus potash soaps, another class of material is sold to a considerable extent, and costing less to make on account of greater capacity for holding water (which is a very cheap adulterant), often proves a thorn in the side of the careful manufacturer of pure potash soaps as well as the purchaser; and the writer here refers to a large number of soaps analyzed by him, which, while having a composition which calls for a large percentage of potash in the alkalin lye used in saponification, contains a rather liberal admixture of caustic soda, which gives a fictitious body and allows the soap to hold a greater percentage of water without such dilution being too apparent

A good potash soap should be almost transparent at ordinary temperature, should absorb moisture rather than lose it when exposed to the atmosphere, and should preferably be composed of the fatty acids derived from olive oil, which always yields an easily made soap of good body, and which is easily removed from the fiber. It should contain no starch, silicate, flour, Glauber salt or other adulteration, and if properly made and finished should retain almost all of the glycerine set free by the process of saponification. While olive oil foots make a good cheap scouring soap, the writer has always preferred to use pure olive oil, which, while costing more, contains more of the albumenoid or gluten bodies which occur so largely in foots oils, and when saponified does so much better work and so much more work, that in the end it is decidedly cheaper.

Oleine, or so-called red oil, also makes an economical scouring soap, but on account of its liability to make goods smell and to leave them rather harsh on account of the absence of glycerine in this oil, it is not often given the preference over olive oil, particularly where the finer grades of stock are handled. Cotton seed foots are not only low in fats, but have the decided disadvantage of making goods sticky, yellow, and liable to have a very bad odor after storing for a while. In preference to cheap cotton seed soaps, it is always better and just as cheap to use a good soda palm oil soap, as it will do much more satisfactory work at no increase in cost. This is particularly applicable to the scouring or fulling of cheaper grades of underwear. In connection with the use of potash soap, the only logical alkali to strengthen same is pure carbonate of potash.

On account of the comparatively high price, as compared with sal soda or soda ash, the temptation to adulterate the former with the latter has unfortunately been too strong, and accordingly has honest carbonate of potash been too often dismissed from the consideration of textile manufacturers, because the benefit derived from the use of inferior adulterated potash did not seem to commensurate with the increase in cost involved. A reliable brand of carbonate of potash (and there are several) should, on analysis, show not less than 80 per cent. pure potash, and if less be found it is almost certain that it has been adulterated with the cheaper soda ash. The platinic chloride reaction applied to the ignited material which is dissolved in hydrochloric acid will often give an idea as to whether potash is heavily mixed with soda, and is conducted as follows: Ignite a few grains of the potash to be tested, and dissolve in a little hydrochloric acid. Evaporate almost to dryness in a small beaker glass, and add just enough platinic chloride to precipitate all potash in microscopic octahedral crystals when evaporated almost to dryness. Then dissolve the evaporated mass in a little alcohol and allow to evaporate spontaneously, when, if the crystalline mass shows a considerable quantity of fine orange-red needles, it indicates the presence of soda. But experience is necessary to distinguish these sodium platinic chloride crystals from the platinum salt, which also crystallizes in needle-like crystals, but if care be taken not to add an excess of the platinic chloride, this reaction is quite distinct.

There is in the market genuine ammoniated carbonate of potash, made by mixing a small quantity of carbonate or sulphate of ammonia with the straight carbonate of potash, but as nearly all of the ammonia volatilizes on boiling and escapes, this product is not of practical value, as better results are invariably obtained where the ammonia is purchased as aqua ammonia and added to the scouring bath after the soap and potash are first dissolved. Ammonia is certainly a valuable adjunct to all scouring of animal fibers, especially if used with judgment, as, unlike potash or soda, it requires no washing out, as it escapes into the air on exposure. It softens water, whitens and softens wool, mohair, etc., and is cheap when purchased as aqua ammonia.

For washing woolen or mixed underwear, either flat or fleece-lined, a mixture of potash soap and ammonia will yield clean, bright goods, which are soft, lofty and without smell. A good formula for using is as follows: Dissolve in 100 gallons of water 100 pounds of soap (potash olive-oil soap is always best), and 40 pounds carbonate of potash. If the water is hard, dissolve potash first. Then using this solution as a stock solution, add to the water in scouring or fulling tub in quantity sufficient to give a good, slippery solution. If the water is hard always soften it with a handful of potash before adding soap solution. Then finally add about a pint of aqua ammonia to the tub just before entering the goods and add a little fresh soap solution to the bath with each new lot of goods immersed. For scouring worsted cloth the writer finds a mixture of equal parts of potash olive-oil soap and a good, pure palm-oil or olive-oil soda soap, the best obtainable mixture, and sal soda can be safely used as an alkali. For heavy-weight underwear this is also an excellent scouring and fulling soap, but potash gives the best results as an alkali to use in connection with this mixture of soaps. When the fulling or felting of woolen goods is considered, the heaviest possible soaps made with soda lye are used to hasten felting, but soda compounds are not desirable for goods which are not required to have a felted surface.

Palm-oil soda soap made on the boiled-down system, which eliminates moisture and impurities, is the soap usually used for fulling meltons, kerseys and other felt faced woolen goods, and with from 25 to 50 per cent. sal soda makes an excellent stock soap solution for this purpose. A soap made from a mixture of equal parts of palm oil and tallow oil, boiled down and dry, is the best soap available for fulling woolen goods on account of its heavy body, smooth, even lubricating properties and ready removal from goods. Tallow soap, while an excellent fulling material, contains too much stearin to be readily rinsed out, particularly in cold weather, and is rapidly giving way to the greatly superior palm-oil products, which are just as cheap and yield a softer finish. As much as potash soaps have been adulterated, even more has the misdirected talent of many soap makers been applied to the "filling" of soaps for fulling cloth. Resin, which causes smell and faulty dyeing; silicate of soda, which

renders goods harsh; starch, which makes wet soaps swell and apparently heavy in body, are favorites for this purpose of lending a fictitious cheapness to hard or soda soaps, and should in equal measure be avoided as mischievous agents in bad work.

The analysis of a good soap should show that it contains not over 30 per cent. total water and that it is free from adulterants and other than clean, sweet and non-rancid oils. All other should be sedulously avoided at no matter what price they are offered, as the only economical soap is a pure soap, bought at close figures, which will without variation yield clean, well-felted goods, which will not smell no matter how long they remain in stock, and which also have a good soft feel and an even coloring. Finish is what sells goods now-a-days, and the mill which uses the best soaps and alkalies will always be able to count on having the most salable products. Soda ash, if free from caustic alkali, is well adapted to use with soda soaps in woolen cloth scouring and finishing, but sal soda is always milder and safer to use on account of its weaker alkalinity and effect on colors, where soda ash free from causticity is not easily obtainable.

THE MILL REPAIR SHOP.

Two papers were presented at the recent meeting of the New England Cotton Manufacturers' Association on this subject by F. M. Messenger, North Grosvenordale, Conn., and by D. D. Donovan, Providence, R.I.

Mr. Messenger said:

A well managed repair shop is a paying institution, and the new parts required for repairs may largely be finished at the mills at a profit. Every cotton manufactory of any considerable size, should have connected with it a first-class shop. It should be handled as an entirely separate business, charging a reasonable sum for its power, office, superintending, rent, taxes, insurance, etc. All raw materials should be charged against the shop as well as its labor. Finished work is placed in stock for delivery, as needed, to the several departments, the shop receiving credit at market prices. All repair work such as mending broken, or applying new parts, or any work of a nature that produces nothing, should be charged to the several departments where it belongs, at the rate of man's time, plus a certain percentage sufficient to cover the rent and other charges against the shop, including use of tools, etc., and bills rendered weekly against the several departments. A well appointed repair shop should consist of a machine and blacksmith shop, a wood working or carpenter shop, and if tenement work is to be done, a tin shop will pay. Each shop should be equipped with all necessary machines of the best. The selection and care of proper tools is a matter of great importance. Any shop employing half a dozen hands should have its tool room, and it should be under the care of one man; he can have a lathe inside, and be kept busy on light work. A checking system should be used, and any tool absent should have in its place a check denoting who has it; this avoids losses and locates the responsibility for breakages. Without some system of this kind the cost of tools is likely to be very large.

Mr. Donovan said:

The engine lathe, the planer and the drill press find places in all repair shops. If these tools are kept in good condition they are an important factor in any shop, and some years ago they would have been considered about all that was required. For the mill repair shop, where repairs must be made with the greatest possible despatch, the universal milling machine will be found an invaluable help; its adaptability to a large range of work makes it indispensable in an up-to-date shop. The vertical attachment recently applied to the milling machine has greatly increased its scope and efficiency at a slight additional cost. The automatic gear cutting machine is another tool to which your attention is called. As the replacing of gears is an important element in mill repairs, the most efficient means should be at hand for the purpose when they are required. A stock room where parts of machinery that are liable to give out could be made up and kept on hand for use when required, would greatly facilitate the making of repairs, for the cost of the part is very slight, as compared with the loss occasioned by the stoppage of the loom or other machinery while the repairs are being made. Drills, reamers and measuring instruments can now be purchased at such reasonable figures that no shop can afford to be without a supply sufficient to meet all requirements. For quick and accurate measurements the micrometer caliper furnishes one of the best means. By its use parts may be duplicated with an exactness that can be obtained in no other way.

CANADIAN COTTON DRESS GOODS.

The manufacture of cotton dress goods in Canada is a comparatively new industry, its success having been assured only during the past two or three years. The manufacturers' agents are already showing the wholesale trade their samples for the coming autumn season. Previously, plain goods have been most in demand, but fancy effects promise to be all popular during the fall of 1898. There has been a wonderful improvement in this trade, and the manufacturers allege they can develop any pattern within the range of textile designs. The cotton dress goods shown this year have every appearance of woolen goods. In the United States a fabric with a cotton warp and woolen filling has sold well, but the difference in utility and appearance is not sufficient to offset the difference in price, and the Canadian cotton mill owners do not follow this example at all extensively. For next autumn small patterns will be in vogue. Fancy tartans are shown in various colors and effects. They do not represent the pattern of any particular clan, but are very attractive, and as the taste of the public has been already developed in this direction, they promise to be "sellers," even though, perhaps, meaningless to a Highlandman. There is a wide range of colors in the new patterns, and as a rule they are very bright. Some of the different shades of red are seen in almost every pattern. Prices, of course, vary greatly with the quality, and will be offered to the trade at all the way from 10 to 35 cents per yard. On the whole, the cotton dress goods for next autumn are a credit to the manufacturers. The mill of the Canadian Colored Cotton Goods Company, at St.

Croix, N.B., has been working on these different lines for some time, and their excellence may be considered in a large measure due to the specialization which a large capital and numerous mill plants make possible.

THE LONDON WOOL SALES.

The January series of London wool sales closed February 2nd. There have been available during the series 171,000 bales, of which quantity 152,000 bales were sold, 82,000 bales to the home trade, 60,000 bales for the continent, and 10,000 bales for America, and 19,000 bales, including 8,000 bales which were not offered, are held over for the next series. The opening of the present series was marked by animated all-round competition, except on the part of French operators, and a general advance of five per cent. was established. Lambs' wool was in meagre supply, and realized extreme rates. Crossbreds were largely offered, and fine, well-grown sold well. Lately, irregularity has been noticed in short faulty, with prices in buyers' favor. At the closing, fine greasy crossbreds were ½d. to 1d. dearer, while others were unchanged. Slipes ranged from parity with the last series' quotations to ½d. higher. South African, in modern quantities, met with ready sale, hardening since the opening. Closing: Snow whites, ½d.; Western fleece, washed, 1d. to 1½d.; Eastern, ¼d. to ½d., and greasies, ¼d. to ¾d. higher.

The broad result of these sales is a rise of 5 to 10 per cent. on Australian merino wools. Light conditioned and deep grown Riverina and Queensland profited most by the improvement, and these descriptions, owing to American support, were fully 10 per cent. dearer. As much may be said of light bulky broken and pieces, and of bellies, which to the end were in strong demand. In superior Western wools the advance is less marked, though some brands realized exceptional prices. For the bulk of medium and inferior grease wool the rise ranges from 5 to 7½ per cent., heavy descriptions showing it least. The improvement in scoured is similar to that in grease; fine Sydney lots were in special request, but all classes of scoured participated in the rise. Superior fine cross-bred was as favored by the market as merino wool, but the lower classes, though at one time they showed some advance, lost it again, and at the close of the series barely maintained the previous level. Cape wools, especially grease, fluctuated in price to some extent, but on the average a rise of ¼d. on grease and ½d. on scoured can be recorded. The sales, which close firmly, were largely attended, and witnessed better competition than the market has experienced of late. America took also, as expected, not a large, yet a fair proportion, but the chief support of the sales was the home trade, which bought freely throughout.

The next series will commence on Tuesday, the 15th March, with a limit of 300,000 bales, the list, however, being closed not later than the 11th March. The next available amount will be about 240,000 to 250,000 bales. The commencement of the third and fourth series has been fixed for 3rd May and 28th June, with a limitation of 300,000 bales in each case.

EFFECTS IN SIMPLE WEAVES.*

One important matter which has to be learned in textile manufacturing is the acquirement of pattern or design by economic means. Generally speaking, it would not be an insuperable task to obtain novelties in the loom if the cost of production were a factor of secondary importance; but in actual practice it infects every department of factory routine. If the ancients had been subject to the inflexible laws of cheapness, which distinguish modern times as the utilitarian age, they would have less liberally adopted those costly materials and laborious processes to which the excellence of their woven fabrics is largely due. While they had no object but to produce ornamental and beautiful textiles, the conditions of present-day industrial life demand that minute attention should be given to the economic as well as to the artistic phase of manufacturing. There are not the same facilities in a technical school for dealing with the problem of cost as there are in the mill. Still teacher and producer alike are interested in the discovery of the most effective and economical systems of manufacture and design. In weaving, for example, there is scope for instruction in the less costly principles of pattern formation. By imparting knowledge in the various methods of acquiring diversity of style without resorting to complex operations, the teacher of the textile arts can contribute his quota to the science of economic manufacturing. At times he may discover or originate some scheme of weaving that will facilitate the construction of novel patterns at a diminished cost. Experiments of this nature at the Yorkshire College resulted, not long ago, in the production of a new type of design for carriage rugs of the Austrian description. Richer and more diversified results were attainable by the system of weaving invented than that generally adopted, and yet the intricacy of manufacture has not in the slightest degree been increased. An extensive knowledge of simple weaves, and the effects they are capable of yielding under certain conditions as to coloring, setting, and the sections of the design they are arranged to occupy, has assisted in the development of this textile novelty, which, by proper manipulation, is calculated to displace, in some branches of the rug trade, the species of weave combination now adopted.

The system of acquiring pattern by combining fancy yarns is one that is fully treated of in the text book, Color in Woven Design. There are rudimentary elements here as in all other branches of designing. Certain groupings of shades on account of their frequent occurrence in all classes of textures may be regarded as types. They form the alphabet of woven coloring. Standard groupings of different shades of yarns may always be extended, amalgamated with other common assortments of threads, and applied to various weaves. Each system of modification may completely change the style of pattern resultant. To excel in the art of applying color to weave effects, it is necessary to be acquainted with the changes in cloth structure and textural design, which may be obtained by varying the operations of the loom. The dyer can afford the designer considerable assistance by the production of

* Roberts Beaumont in the *Textile Recorder*.

new shades; the artist can add to his qualifications by developing his feeling for color assortment and general harmony of composition, but unless he understands the technique of the subject—namely, the form of the patterns yielded by certain arrangements of shades when applied to different schemes of weaving—he cannot be successful in his work. A textile designer ought to be able to dissect the principles of design present in any woven fabric submitted to his notice. Competency of this kind is acquired by experimental research, and by the study of all the principal types of weaving and schemes of color arrangement.

SHAM WOOLENS FROM BRADFORD.

We have always hitherto been a little proud of the fact that most of the imitations were made in Germany. We have thought that British manufactures were for the larger part what they claimed to be, but times change and so tariffs and the Dingley bill have driven the British manufacturers to produce all cotton goods that masquerade as all wool in the most flagrantly "German" way. On this subject we quote from the *Drapers' Record*, London, England:

We are extremely glad to learn that in the opinion of the Textile Society of Bradford that town is on the eve of a trade revival. One of the speakers indicated the new process, whereby cotton is made to look like silk, as the means by which the new prosperity is to be wooed and won. We can quite understand Bradford manufacturers feeling that almost any kind of textile production that promised to be lucrative would be welcome. Bradford has always been identified with materials, the sterling qualities of which have been known the world over, and to exchange such manufactures—which not only enriched those engaged in the industry, but at the same time benefited the world—for artificial productions of which the best that could be said was that they were cheap and showy, would indeed be a falling off. Needless to say, we wish well to all textile enterprises. But we share the hope that the forthcoming revival of trade in Bradford will be based on the continued production of "articles of endurance and utility, and not merely of cheapness." *Apropos* of this subject, it is particularly interesting to note the views expressed by Professor Beaumont, who recently lectured at the Bradford Technical College on "The Woolen Industry, 1837-97." The lecturer traced the development of that industry, and incidentally referred to the painful and futile struggle of the weavers against the introduction of machinery. Naturally the operatives disliked the movement which transformed them from actual producers to mere machine minders. The influence of Hindoo skill in shawl-making received due recognition, and the professor pointed out some of the changes that had occurred in the localization of the different branches of the woolen industry. We quote a few sentences from this very interesting portion of the lecture:—

"Bradford owed its progress to the unique part which its manufacturers have played in the discovery of materials whose value was hitherto unknown, and to the invention of machinery for its utilization. Huddersfield owed its position as the centre of the fine worsted trade to the distinction which its manufacturers gained in the production of fancy vestings. Leeds had suffered in reputation from its early association with the plain trade, which had unfitted its craftsmen for dealing with fancy cloths. West of England manufacturers had also been fettered by the lines pursued by their predecessors, who had made cloths of the plainest character."

Those who believe in the future of artificial silk will derive comfort from the reflection that what happened to Bradford manufacturers once may do so again. But we are very glad to observe that Professor Beaumont does not think that the Yorkshire woolen industry has seen its best days. He was not afraid to prophesy an expansion of that industry, despite foreign competition and other drawbacks, and urged that there was need in manufacture of a lofty ideal, without which permanent success was impossible. The cultivation of cheap manufacture, the lecturer continued, was not helpful to industrial progress in the highest sense, and the craftsman should aim at incorporating in his work the harmonies of color and beauty of design which were suggested by Nature.

The Bradford correspondent of the *American Wool and Cotton Reporter* has examined into the facts in the case and reports that the present situation there cannot be radically cured without monthly exports to the United States of $1,250,000 to $1,500,000. He says that wool goods made entirely of cotton are quite likely to make their appearance in America. Nothing more interesting in this line has ever come under his observation. For instance, a sample of lining has a soft feel and a shiny face, and the manufacturer is quite right in saying that "no inexperienced hand would ever think that it is anything else but silk or satin, if they saw that lining in a garment." And yet it is every particle cotton. Furthermore, goods of this make have already been shipped to the United States at 5¼d., or 10½c. a yard, and this is only an average price, there having been consignments of linings at lower figures. More interesting, he says, is a sample of lightweight Clay coating. This is also all cotton. An expert would not be deceived altogether regarding this fabric, though he might not suppose that it was altogether devoid of wool. The inexperienced person, however, would be led astray. Not much of this fabric has yet been shipped to this country, but large hopes are entertained in Bradford regarding the outlook. This is invoiced at one shiling per yard, 11 ounces, and the goods can be had in any shade, and also in any weight, though only light weights have been shipped as yet. But most wonderful of all is a dress goods pattern, which is a "most ingeniously constructed cloth." The fabric has an up-to-date, attractive and fashionable appearance; and to indicate that we do not speak rashly, we will state that the Bradford manufacturers who make these fancies are the only people who are at all busy. They are made entirely of cotton, both weft and warp, with the exception of the figure, which is mohair. Eighty per cent. or more of the fabric is cotton, but, as our correspondent says, there is not one in fifty

who would suspect the fact. The casual onlooker would not suspect adulteration, and would have to unravel the cloth to detect that it was made of cotton.

THE TEXTILE MATERIALS OF ANTIQUITY.*

Since the fabrics produced during the latter period of the Roman Empire carry us out of the ancient world and into mediæval times, it will be well to pause in order to consider the nature of the raw materials available in ancient times for manufacturing purposes, and also the tools used by Greek and Roman weavers to convert such materials into textiles. If an attempt be made to classify the fibrous substances of antiquity, it will be found that some were derived from the animal, some from the vegetable, and others from the mineral kingdoms. But of all the raw materials employed in making cloth, the wool of sheep was by far the most important in Syria, Palestine, Asia Minor, Greece, Italy, and Spain. The goat was also a valuable animal, for we are told that "it yields a profit from its hair, which is necessary for making ropes, sacks and similar articles, and for nautical purposes, since it is not easily cut, and does not rot from natural causes, unless it be much neglected." It was manufactured into dresses for sailors, "both on account of their hardy mode of life, and because cloth of goat hair was better adapted than any other kind to bear exposure to water"; also into curtains for tents, into bags, sacks and carpets. It was used "to cover towers in sieges, because it could not be set on fire; to obviate the force of the various weapons hurled against them, and especially of the arrows which carried fire." Hair, or sack cloth, was also employed in many Eastern countries, and by people in all ranks of life, to express mourning and mortification. It was, for this purpose, put upon the bodies of both men and women, and occasionally upon those of beasts.

The fine underwool of the goat does not appear to have been used in ancient Greece or Rome, as mention is only made of goat's hair, and that was manufactured into the coarsest fabrics; but farther East goat's wool was wrought into fabrics in very early times. A cloth was, however, made of "goat's hair warp and beaver's wool weft, yet it seems probable that the Greeks and Romans did not use cloth of beaver's wool until the fourth century." Camel's wool and camel's hair have long been used in Persia, Northern India, Afghanistan and China, to make robes for priests and princes, shawls, coverlets, carpets, and many other articles of coarse and fine texture; but whether or no these articles were ever manufactured in ancient Greece or Rome is open to doubt. Gibbon says of the Greeks: "They were intimately acquainted with a shell-fish of the Mediterranean, surnamed the silk-worm of the sea; the fine wool or hair by which the mother-of-pearl affixes itself to the rock is now manufactured for curiosity rather than use; and a robe obtained from the same singular materal was the gift of the Roman Emperor to the satraps of Armenia." This "pinna, or fish wool, of the ancients, is a bivalve fish, which, when full grown, is 18 inches long and about 6 inches wide at its broad end." It is found near the shores of Southern India, Southern Italy, Sicily, Corsica, Sardinia, and in the Bay of Smyrna. It fixes itself perpendicularly in the sand by its narrow-jointed extremity, and attaches itself on one side by a tuft of fibers to the sand or stone. These shell-fish are brought to the surface by divers, as well as by an instrument attached to one end of a wooden pole.

The fibers vary in quality, but the best are silky and of a brown cinnamon or glossy gold colour, which was highly esteemed, for "St. Basil mentions with admiration the golden fleece of the pinna, which no artificial dye could imitate." The fibers were washed, partially separated by hand, dried, carded, and spun with the distaff and spindle. Much of the yarn so procured is now knitted into stockings and gloves. In ancient times some would also doubtless be knitted, for that the Greeks and Romans were familiar with this method of manufacture now admits of no doubt. Much of it, however, would probably be woven, and some fine cloths of this material were made in India, and thence imported into Greece and other countries. The central regions of Asia seem to have been the natural home of silk, from whence fabrics were imported into Greece and Rome in early times; in later times raw silk was imported and manufactured. In still later times silk was reared and manufactured in those countries.

Of all the fibers of vegetable origin, flax was the most important; it was extensively cultivated and manufactured in Egypt and Babylonia, where it was employed "to make all descriptions of cloth from the coarsest canvas or sailcloth to the most beautiful lawn or cambric; hence there must have been, as there now are, great differences in the living plant." In the Old Testament, in addition to its use for clothing, furniture and coverings, we find that flax was employed for making cords and ropes, for the wicks of lamps, and for measuring lines. Fine linen, or byssus, was made from an extremely fine and delicate flax, and it was so very dear that none but wealthy persons could afford to wear it. Some say the name byssus was given by the Greeks to these fabrics, but others consider the word to be Egyptian with a Greek or Latin termination. In the time of Homer the manufacture of flax, if not unknown to the Greeks, was practised on a small scale, for the use of linen cloth was rare amongst them; indeed, "the only part of Greece where flax is recorded to have been grown was Elis." On the other hand, "flax," observes Professor Muller, "was grown and manufactured in Southern Etruria from ancient times, and thus the Tarquinii were enabled to furnish sailcloth for the fleet of Scipio. Yarn for making nets was produced on the banks of the Tiber, and fine linen for clothing in Falerii." Coarser linen was used in great quantity for awnings to keep the heat of the sun from the theatres and other places of public resort. Hemp seems to find a natural home in the northern countries of Europe, and its use amongst the ancients was very limited. Nevertheless, Herodotus says the Thracians made garments of it which were so like linen that none but experienced persons could tell whether they were hemp or flax. We are also informed that earlier than 200 years B.C.,

* By T. W. Fox, headmaster of the weaving department, Municipal Technica School, Manchester.

hemp from the Rhone was used for making ropes. This material was probably imported into Greece, Italy and Asia Minor from more northern countries. Pliny mentions a plant used by the inhabitants of Spain for making mattresses, shoes and coarse garments, but whether it was Spanish broom, esparto grass, r'.ea or jute, it is difficult to determine.

Valuable robes, and other articles of clothing, of a silky, translucent texture, called amorgos, were worn by rich, fashionable and luxurious women of Athens, in the time of Aristophanes, and from thence they extended to Sicily and Italy. Yates considers amorgos fiber was probably obtained from the common mallow. Cotton has for untold ages been a characteristic manufacture of China, India, Arabia and the countries bordering on the Persian Gulf, but there "is no reason to believe that either the Egyptians or the Israelites, in the time of Moses, knew anything of cotton." The Greeks and Romans became acquainted with cotton much earlier than with silk. The last-named people were chiefly supplied with cotton from India, Egypt, Persia and Babylonia; it was not only a cheaper and commoner article than silk, but it was particularly adapted for awnings, on account of its lightness, as well as its beauty and fineness. It was, nevertheless, looked upon "as an expensive and curious production rather than as an article of common use among the Greeks and Romans, and from what we know of the properties of cotton, no reason appears why they should have used it in preference to linen."

Gold and silver were woven into fabrics by the Indians and Persians long before these metals were known to the Greeks and Romans, and although Alexander and his generals employed cloths of gold and silver for clothing and tent furniture, it is probable that these materials were only used to a very limited extent, even at a considerably later period. Whether or no, as some believe, the Greeks were the first who spun and manufactured asbestos, it is certain that this mineral was used by them for a variety of purposes, as will be seen from the following extract from a Greek author named Sotacus. He says. "A stone found in Carystus, and in great abundance in Cyprus, has wooly and colored appendages, which are spun and woven into napkins. The latter when dirty are not washed with water, but a fire is made of sticks, and then they are put into it. The dirt disappears, and the napkins are rendered white and pure by the fire, and are applicable to the same purposes as before. This substance is also twisted into wicks for lamps, which when immersed in oil burn brightly and continually without being consumed."

Plutarch speaks of napkins, nets, and head dresses made of the Carystian stone, and Pliny says "it was used to make the funeral shirts of kings, it being adapted to keep together the ashes of the body, which would otherwise have been confounded with those of the funeral pile." Pieces of asbestine cloth have been occasionally found in the tombs in Italy. One such piece, about 5 ft. wide and 6½ ft. long, is, or was, preserved in the Vatican Library. It is described as "coarsely spun, but as soft and pliant as silk." The writer proceeds: "Our guide set fire to one corner of it, and the very same part burnt repeatedly with great rapidity and brightness without being at all injured." Asbestos has long been used in India and other Eastern countries, and it is said that those who travel through Asia with caravans wore beneath their ordinary garments closely fitting socks or stockings and drawers of asbestos, as a protection from the heat. Pliny calls it the incombustible flax, and says it was of even greater value than byssus.

THE 1896-97 COTTON CROP.

A circular from Statistician Hyde, of the U. S. Agricultural Department, gives considerable information concerning the cotton crop of 1896 97, its value, the amount purchased by mills and the acreage planted. It shows that the cotton crop of 1896-97 amounted in commercial bales to 8,532,705, made up by the following States: Alabama, 833,789, Arkansas, 605,643. Florida, 48,730, Georgia, 1,299,340, Indian Territory, 87,705, Kansas, 61; Kentucky, 414; Louisiana, 567,251; Mississippi, 1,201,000; Missouri, 24,119; North Carolina 521,795; Oklahoma, 35,251; South Carolina, 936,463; Tennessee, 236,981, Texas, 2,122,701, Utah, 123, Virginia, 11,539. It is stated that the large and increasing amount of raw cotton taken directly from the current crop by mills from the cotton growing States is more than ever an important factor in estimating the annual production. Ten years ago only about 6 per cent. of a crop of 6,500,000 bales has been used by those States, while during the year 1896 97 they used over 11 per cent. of a crop of over eight and one-half million bales. The number of mills in operation during the year was 402, the number of spindles 3,344,327, and the number of bales bought 981,991.

—Some items of United States sales to British North America, compared with the same nine months of 1896, are as follows.

	1896	1897.
Cotton, raw, lbs	20,094,000	22,657 000
Cotton, raw	$ 1,666,000	$ 1,666,000
Cotton cloths, yards	27,796,000	12,774,000
Cotton cloths	$ 1,672,000	$ 767,000
Cotton, manufactures of	1,103 000	1,183,000
Wool, raw	268 000	112,000

—A great change has taken place in the last few years in the dyeing of half wool blacks, as every dyer is aware The old two and three bath methods were very long and tedious, and often quite unsatisfactory, having to be repeated sometimes to produce a satisfactory result. The long, twisted band fiber of the cotton and the circular, tube-shaped fiber of the wool being so totally different in physical and chemical properties that it seemed to place unsurmountable difficulties in the way of getting one color to have an affinity for both fibers This was, however, overcome, it is claimed, when a chemist in the Farbenfabriken, of Elberfeld discovered a series of blacks which were found to have an equal affinity for both fibers The colors referred to are Direct Blue Black B and N, and Direct Deep Black T and G, with which dyers have become so familiar the most satisfactory mordant has proved to be common salt, about 15 per cent Six pounds of any of the above blacks per 100 lbs goods gives an excellent full black raise slowly to boil and boil for two hours 8 lbs per 100 of goods is required for raw cotton and 15 lbs. salt, but for half wool more salt, about 20 lbs, is recommended. Where a standing bath is required, correspondingly less color is required, viz, about one-third less.

TEXTILE TRADE WITH BRITAIN.

We give below a summary of thirteen years of textile exports from Great Britain to Canada, compiled from the British Board of Trade returns. We may explain that the item of haberdashery for 1885 is an estimate, and that the recent changes in the classification of silks prevent us from giving full and correct returns. The December returns will be found in another place: -

	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.
	£	£	£	£	£	£	£	£	£	£	£	£	£
Raw wool.....	36,958	32,276	18,317	10,153	26,914	24,173	25,035	21,623	22,310	14,317	16,312	13,210	48,018
Cot. piece goods	629,195	634,158	620,378	499,230	494,752	404,417	420,005	453,017	515,711	431,259	447,919	421,157	399,887
Jute piece goods	.....	.....	.....	.....	92,278	91,444	106,811	114,140	137,860	99,040	98,057	151,808	126,189
Linen p'ce goods	145,287	153,242	178,039	149,116	181,249	138,343	1. 6,527	177,047	139,406	111,637	142,597	135,252	120,768
Silk broad-stuffs	24,186	287,672	7,501	17,521	6,710	3,433	76	.....	.....	.....			
" ribbons ..	10,485	8,338	7,097	3,893	1,788	496	538	.....	.....	.....	21,842	7,638	26,017
" laces	.....	.....	.....	.....	.....	.....	.....	53,381	41,080	32,023			
" mix'd goods	63,929	98,540	74,149	70,822	54,974	34,985	44,136	60,438	70,990	41,788	35,234	27,232	.....
Woolen fabrics..	642,347	703,306	636,424	539,691	497,132	336,417	335,792	386,163	343,977	255,525	228,875	255,511	219,784
Worsted fabrics	465,820	599,485	626,710	488,418	640,824	518,354	588,581	637,042	661,949	463,873	551,454	519,445	579,248
Carpets	183,979	216,329	240,910	186,993	221,291	171,860	206,695	201,405	227,607	162,113	166,450	153,582	139,343
Apparel & slops	240,000	260,397	227,080	291,904	331 285	346,568	377,408	395 676	338,091	298,305	351 059	343 901	300,532
Haberdashery..	*507,217	480,699	535,946	436,683	432,940	373,201	401,684	394,784	252,483	144,647	148,370	150,911	138,101
*Estimated.	2,959,403	3,222,517	3,212,551	2,694,424	2,982,037	2,443,691	2,653,088	2,900 716	2,751,464	2 054,527	2 208,169	2,179,653	2,097,887

CUT V. FASHIONED UNDERWEAR.

During the past few months, considerable attention has been brought to bear on the advantages and disadvantages of cut or fashioned underwear, says a writer in the *Knitter's Circular* Certainly this has been of particular interest to those who study the varying principles of the trade. In the earlier period of the hand and rotary stocking frame, and before the advent of circular machinery, fabrics were usually made in straight pieces, or in certain cases, shaped as required by the process of hand narrowing or widening Certain of the straight fabrics of those days were cut into shape to make certain garments, that difficulty attended in making on the fashioned principle. With the introduction of circular machinery, cut goods became a strong department, though in the early period of its introduction, there was a difficulty in making a good reliable joining. This has now become a matter of little importance, the advance made in sewing machines has done away with many of the former prejudices It is not our intention to give an opinion on the advantages of the one system over the other, but rather to deal with each, showing those points that have come before our notice as being of interest.

In the cut underwear department, the first point of attention is that of the cost of machinery in relation to its production. Roll fabrics are made on both the English loop wheel frames and the French circular frames, with bearded needles, and also on the English latch needle frames Each of these machines are specially adapted for different fabrics, each machine having some peculiarity in its mechanism which tends to favor its use in special cases. There is no doubt as regards the production of low grade fabrics, that the English latch needle frame on the feeder principle, is the largest producer, but as regards its use for finer gauges, where the fabric is required to have a good face, other machines are far more satisfactory. A deal may be said as regards the different system of bearded needle circular frames, and though both have been used very largely, at the present time, the opinion of many is in favor of one, rather than the other. The particulars of each of these machines would, no doubt, be an interesting subject, but this we prefer to leave to our readers, however, we should be pleased to know the opinions of those closely connected with each system. Having produced the fabric, it becomes necessary to cut up same into garments. Another point of interest is the advantage or disadvantage of cutting same in the rough, as it leaves the machine, putting together the garment, and then to dress and finish, and board to shape afterwards, or, on the other hand, to finish the web in the piece, pressing the same before cutting out the garment, such garment being cut to the exact size and shape required. It is not intended here to treat on these details, but rather to confine ourselves to cut underwear in general. The great difficulty of making a satisfactory and bulkless joining having been most successfully overcome by the "overlock system of sewing machines, together with the point linking machines for joining the loops together, the only apparent question at issue is that of "waste." It is well known that in cutting out certain garments, to get the required shape, a deal of the fabric is cut away, and in such a form as to be useless for other purposes. This being so, the question of fashioned *versus* cut underwear seems to rest more on this point than any other. Some special garments can only be produced satisfactorily from the fabric by the cutting process, it is not of these that we speak, but more especially the more general garments, as shirts, pants, vests and combinations.

These articles, produced upon the rotary frame, are shaped as required, and then no waste occurs by cutting. Here, the point of interest rests on the cost of production and working plant. This, in wrought or fashioning machinery, of the latest type, is well known to be expensive, but the class of garments made on these machines bears a fair proportion of trade Each class of garments being salable, both should be made on their own merits, and left to depend on same, and not be set up as the enemy of the other, but *rather for each to run side by side for the benefit of producers and consumers.* The great competition of both cut and wrought goods in the hose and half-hose branch of our industry, has been that of producing goods entirely seamless This, as yet, has not been introduced to any extent in the underwear department, though it must be understood that steady progress is being made in this direction. At present only latch needle machines have been used with any amount of success, but with the introduction of bearded needle flat frames, capable of producing circular fashioned web, then we may expect circular underwear to compete with both cut and fashioned makes

LEARNING WOOLEN MANUFACTURING.

By beginning right, a man of ordinary intelligence should learn the woolen manufacturing business in five years. He should start in at the wool sorting, says a writer in the *American Wool and Cotton Reporter*, stay in that department long enough to get accustomed to the grading of the wool, then go on to the scouring, picking, carding, etc., devoting from three months to a year to the different branches of the business, from the raw material to the finished cloth

Two divisions are fixed for the classification of wools. The first includes carding wools, or those intended for construction into woolen cloths. The second includes combing wools which are intended for weaving into worsted cloths. In the grade of wools for woolen cloth manufacture are included a descending series from the finest to the most worthless, which are abbreviated. 1, picklock. 2, prime. 3, choice. 4, super. 5, head. 6, second. 7, abb. 8, breech. and the proportions in which the higher and lower qualities are present are determined by the qualities of the fleece or the race yielding the wool The worsted classification is as follows. 1, fine. 2, blue. 3, neat. 4, brown. 5, breech. 6, downrights. 7, seconds. 8, abb *The three last mentioned,* however, are but seldom used in worsted cloth.

The shoulders give a long and fine wool, which is generally the best part of the fleece, as it grows the closest and most even. The fiber is fine, soft and lustrous. A principal characteristic is its evenness of quality, therefore, it is well adapted for use in fine fabrics Choice is the good strong substantial wool But a comparatively small portion is obtainable. The principal characteristics are elasticity, strength and smoothness, it is, however, inclined to be some

what coarser than the two former grades. On the back of the neck is found wool of a much inferior staple, and on most fleeces this part is so seedy that it has to be taken to the duster, if there is any gray wool, it is generally found here Over the loin and back the wool is coarser and shorter. Head is that portion of the fleece which is taken from the vicinity of the horns and ears. It is invariably coarse and inferior in nearly all its properties. It is not a good wool for the manufacture of anything but a low grade of coarse and inferior goods. It makes a firm and durable listing material, however, and is extensively utilized for that purpose Around the haunches of the animal the wool grows long and strong, hanging in large locks. The coarsest part of the fleece is around the tail, and it is here that most of the kemp or dead hairs are found The wool on the belly is short and fine, but as a rule, so dirty that it never can be washed bright. On the chest and throat the wool is usually short and worn with rubbing.

The parts of the fleece located immediately below the sides of the animal are constantly brought into contact with the high grass and vegetation on which the sheep feeds. The consequences are that burrs, pieces of straw, and numerous other foreign substances collect, and the actual value of this portion of the fleece is depreciated.

To be a good grader means to be able to tell a fleece as soon as one touches it, know its quality and per cent of shrinkage sufficiently near to decide whether it is unmerchantable or not

Besides the earthy matter on wool, there is the grease, a yellow oily substance which is mainly caused by the accumulated sweat of the preceding year, and by a secretion from the glands of the skin Analyzed, it is found to consist mainly of potash, animal oil, a small quantity of carbonate of potash, traces of acetate of potash and muriate of potash. *This yolk keeps the fibers of wool oiled This yolk or* "suint" is in itself a soap, in which the oil is in excess of the alkali potash, and a man who has thoroughly realized its value is enabled to clean his wool by its aid.

A point of importance concerning the scouring of wool is the water. Good machinery and soaps may be bought, but if the water is unfit the results will not be satisfactory. Some waters have to be distilled before they are suitable for washing wool, while other kinds need only softening. Distilled waters are generally prepared from ordinary water by distilling it from iron boilers. I have found it a fact that such water contains not only the ammonia, which might have been in the water, but also the ammonia derived from the albuminoid ammonia, and even this is frequently not enough to account for the large quantity of ammonia found in such distilled waters, showing conclusively that the nitrates in the water must have aided in its production. This can be easily understood if we consider that metals reduce nitrates to ammonia in the presence of alkaline substances, which, like lime in the shape of carbonate, are almost universally found in water Such distilled water contains also nitrites, though in this case the organisms are not to be blamed for their production.

The average mill has access to rain, river and well waters, and the principal source of these is rain, snow or hail. Rain water from the absence of earthy salts is very soft, and on that account is for some purposes preferable to hard waters. Rain, after it reaches the earth, soaks down into it, and during its passage through the various strata, dissolves certain salts, etc., the quantity and quality of which vary with the nature of the strata with which it comes in contact. River water usually contains from 10 to 20 or 25 grains of solid matter per imperial gallon of 70,000 grains. The quantity varies with the time of the year and the dryness of the season. The springs generally yield hard waters, that is, water containing earthy salts in solution, the most frequent of which are carbonate of lime, carbonate of magnesia, sulphate of lime and magnesia, common salt and organic matter. Spring waters and well waters are very similar. Borax and alum are largely used for rendering the water soft. Borax is one of the gentlest of the alkalies.

Urine is often used for scouring. The urine is stale before using, and consequently contains not only ammonia, but a large amount of potash The potash causes the whiteness, and the ammonia will saponify the animal grease, and when thrown into the washer in a warm state, the grease will easily wash off. The sheep feed upon vegetation which contains potash, more or less, and that will be absorbed in the blood, and so reaches the wool upon their skins. The potash is a property which the wool contains necessarily Potash is, therefore, required to cleanse and whiten it Perhaps the question may be asked, What good are potash soaps, any way? and my answer to such a question is potash soaps are the only products which will readily assimilate with the grease or waxy substance contained in the wool, making it easier, therefore, to remove such grease and potash soap will soften the fiber, whereas soda will harden it.

The wool to be carbonized is entered in a chloride of aluminium bath from 6 degrees to 7 degrees B and carefully handled, and the carbonizing fluid is permitted to operate for a few hours The wool is then taken out, whizzed, dried upon hurdles at medium temperature, and entered into the carbonizing chamber, which is heated to 194 degrees F., and in which it is left for one hour After removing the remains of the vegetable fibers, etc., in a suitable manner, either by brushing or beating, the wool is washed. When using the chloride of aluminium process, no de-acidulation takes place, as is required when treating with sulphuric acid. A simple washing in soft water with Fuller's earth expels the easily soluble chloride of aluminium Undyed wool is often carbonized in the yolk, which acts as a protector This kind of wool, after it is freed from the adhering dirt by steeping in water, is saturated in a sulphuric acid bath from 3 degrees to 4 degrees B The wool is then taken out, whizzed and dried

The man who learns the woolen business this year will find much improved apparatus in the up-to-date scouring department One device is for conveying wool from the washing machine to the drying machine, by the way of a stuff chest It is comparatively easy in this process to get the wool from the washer to the chest, for gravity facilitates matters in this respect, but when the material must be raised from the chest to the mixing box, then considerable work must be done, and frequently the facilities for doing this work are not what they should be Hence there is trouble The ball valve plunger pump is usually used for forcing the stock because it admits of passing bunches of wool more or less large through the pump. To use but one of the pumps, means a failure These pumps are all single acting, and the power necessary to start a column of wool is considerable. It is no wonder that the pipes frequently burst. It would be much better to put in two or three pumps of smaller capacity, all connected to the same shaft and working at angles of 60 degrees to each other. Then the stream of wool would be kept in motion all the time, or at least approximately so. The suction power usually put in for operating suction boxes is constructed upon this principle, and thereby maintains more easily an approximately negative pressure in the suction box.

As in recent years, many woolen manufacturers have been compelled by the town authorities to cleanse waste water before running it into the river, the accompanying description is of a waste water purifier-system The waste water runs into a basin in which it collects during the day, and is allowed to stand for 24 hours The greater part of the impurities are deposited, and the upper layer of the water becomes more clear. A sluice gate is then opened, and the partially cleansed liquor escapes into another basin During its flow into this, lime water is run in to precipitate the remaining impurities. The contents of basin two are allowed to stand for 24 hours, during which time the lime having precipitated out the impurities, it becomes clear. Then it is run into still another basin, and a mixture of sulphate of iron and sulphate of magnesia is run in, and the water is allowed to stand for 24 hours, after which it is run into the river or brook, for by this time it is fairly well filtered.

In arranging a proper system of piping for steam, water, solutions, etc., in the wool scouring department, it is necessary to bear in mind that a complicated network of lines must be avoided if possible. When admissible, run direct main lines of piping for each flow, from which all secondary lines are branched Have all lines of pipe as free and unobstructed as possible, that is, use straightway valves so that they will not tend to back up the water Have means of readily draining all piping when it is not in operation, so that there will be no substance formed in the pipes, and so that that there will be no hammering when steam is turned on. Generally speaking, the draining points for the main lines and for each secondary system of piping ought to be separate. These draining points should all drain to one main return to hot well, boilers or supply source, except in some

instances where it may be better to drain the various points, or some of them at least, separately to the hot well or boilers.

I will close this chapter with the remark that we shall go to the picking, mixing and carding rooms next, and with the suggestion that the student have access to some literature on the matter. A great help to the young man is found in the trade journals. Here, as a rule, can be found instruction to be relied upon. In the perusal of this class of literature, the learner is constantly brought in contact with some of the best overseers and manufacturers in the country. He learns from these authorities much of practical value and assistance to him in his daily work. If he is a careful reader of this class of literature, and ambitious to excel, he will soon be able to detect erroneous habits and inferior workmanship in the incompetents (if there be any) about him.

(To be continued.)

MANUFACTURING IN THE UNITED STATES.

At the annual convention of the National Association of Manufacturers, held in New York recently, the president, T. C. Search, delivered an address, of which we give a summary below:

In the annual report of the association he reviewed at length the growth of American exports, shipping facilities, the consular service, banking and patent laws. During the twelve months which have elapsed since the members of the National Association of Manufacturers last met in annual convention there have been marked changes in business conditions in the United States, and our industries have progressed from long-continued dulness and stagnation into pronounced activity. The interests of the membership of this association are so largely concerned with the export trade of the nation, that some of the significant features of our foreign commerce of the present time invite first consideration. On the 30th day of last June there was completed a year that is without an equal in the annals of our foreign trade, for during that period the total exports of products of the United States reached the enormous value of $1,032,998,880, exceeding over $17,000,000 the largest aggregate of exports ever reached in any previous year —$1,015,732,011 in the fiscal year 1891-2 Never before has the balance of trade been so largely in favor of the United States, the excess of exports over imports in the last fiscal year having been $287,613,186.

The statistics of our exports of manufactured articles might be analyzed to the minutest detail with significant and interesting disclosures at every step Without going too deeply into such an analysis, I wish to point out a few significant features in our export of manufactured articles during the fiscal year 1897. Cotton cloths show an increase from $12,958,357 to $17,281,620, largely in the trade with the Far East, the exports to China alone having increased from $3,854,146 to $7,438,203, this gain representing nearly the entire increase in the exports of these fabrics. In the single item of machinery of miscellaneous kinds there was an increase from $21,614 430 to $29 444,317.

What we have already accomplished in the development of our foreign trade is but a slight suggestion of what will be accomplished in the future. What we have gained in this field has come to us often only after costly experiment. Experience shows us clearly the limitations, natural or artificial, which prevent an easier advance toward the great ends we are striving to attain. The shipping question is still to day inseparably bound up with the problem of the extension of American trade. The most important link between the maker and the foreign consumer is the ship, and if our systems of ocean transport are not the equal of those of any other land, we are, it would seem, at a disadvantage, for which nothing else can give us adequate compensation Trade between countries follows the lines of least resistance, and it should be our policy when we desire to extend our commerce to seek to remove such artificial barriers as hinder profitable intercourse. It is for this reason that we aim to improve the country's shipping facilities upon the high seas and have identified ourselves with many other movements which promise to bring important consequences. In line with this thought and aim it is clear that the customs tariffs of the countries with which we desire to make exchanges are an influence to help or hinder trade The line of merchandise that goes out from our shores and meets with a heavy tariff charge upon another government's customs frontier, bounds back, as it were, and must go out again in some other direction until it finds a point at which the gates are open

Development of the plans of the Association for an extensive system of sample warehouses in foreign countries has formed one of the most important features of our work during the past year, in fact it may properly be regarded as the most important line of practical work in which the resources of the association have been employed. The first of the establishments of this kind which are in contemplation is that in Caracas, Venezuela, and it is with much satisfaction that I am able to announce that this warehouse will be ready for public opening during the coming month. A change in the Federal administration within the past year has furnished another very striking object lesson showing the evils which exist in our present system of appointments and removals in the consular service. In accordance with the time-honored custom there have been sweeping changes in the service, and nearly all of the important officials have been changed since last March. In the principal home countries, exclusive of colonies, there are about 150 consuls, not counting vice-consuls, consular agents and other minor offices. In all there have been 276 appointments in the consular service of the United States since last March, and the majority of the offices in which there has been no change are of minor importance. The evil of a system which will permit such disorganization every four years is apparent. It is impossible to compute the loss that is inflicted upon American commerce by the periodical demoralization of the consular service, and a thorough reform of the present system in such a manner as to eradicate this evil entirely would be worth more to the business interests of the United States than any man can imagine.

The affairs of the association have prospered during the past year There has been a steady increase in the membership and the interest of the members has been maintained in a very gratifying manner. The work that was contemplated when the National Association of Manufacturers was organized looked only to the promotion of the general welfare of the manufacturing interests of the country, and its supporters were necessarily men of patriotism. In the natural development of our work, however, we have come to many lines of activity of a more purely practical business character, and while the chief purposes of the association still are of the broadest character, we are gradually increasing the amount of personal service that is rendered to the individual members. What was originally intended as a mere association of manufacturers has gradually developed into a great business institution, conducting operations in many parts of the world, requiring a large staff of trained workers and ample funds for the conduct of its work. These are facts that may not have impressed themselves upon members who have not made themselves familiar with the work, but they must be taken into consideration in any discussion of the affairs of the association. At the close of this the third year of this association I feel that every feature of the situation gives promise of a far greater field of usefulness in the year to come than we have known in the past, and with the co-operation of the members, those to whom you delegate its management will be able to show you at the end of another year far greater and more beneficial results than have appeared thus far.

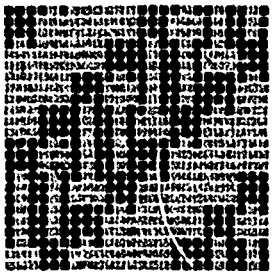
TEXTILE IMPORTS FROM GREAT BRITAIN.

The following are the sterling values of the textile imports into Canada during Dec., 1896, 1897, and the eleven months to Dec., 1896, 1897:—

	Month of Dec.		Eleven months to Dec.,	
Exports to Canada.	1896	1897	1896	1897
Wool	£4,648	£ 7,759	£13 210	£48,018
Cotton piece goods	34,961	57,309	420,717	399,887
Jute piece goods	7,977	8,639	152,003	120,768
Linen piece goods	9,029	13,448	135,299	126,189
Silk, lace	554	374	7,641	5,462
articles partly of	1,464	1,280	26,975	20,555
Woolen fabrics	11,483	11,430	255,578	219 784
Worsted fabrics	41,306	59,954	573,584	579 248
Carpets	7,180	9,463	173 582	139 353
Apparel and slops	14,766	17,415	313 675	300,532
Haberdashery	5,760	5,787	150,941	138,101

Textile Design

FANCY WORSTED SUITING



Complete Weaves.
Repeat 24 x 24

Warp—7,920 ends, 24 harness, straight draw.
Reed—20 x 6 - 66 inches wide in the loom.
Dress—

3 ends, 2/50's, worsted, medium shade 3 ends, 2/50's, worsted, light shade	× 12	72 ends
3 ends, 2/50 s, worsted, lively shade	—	3 ends
3 ends, 2/50's, worsted, light shade		3 ends.
3 ends, 2/50's, worsted, medium shade 3 ends, 2/50's, worsted, light shade	× 11 =	66 ends.
6 ends, 2/50's, worsted, medium shade 6 ends, 2/50's, worsted, light shade	× 10 =	120 ends.
	Repeat of dressing	264 ends.

Filling—120 picks per inch, arranged thus

2 picks, 2/50's, worsted, dark shade 1 pick, 2/25's, worsted, dark shade 2 picks, 2/50's, worsted, medium shade 1 pick, 2/25's, worsted, dark shade	× 16	96 picks
2 picks, 2/50's, worsted, lively shade		2 picks
1 pick, 2/25's, worsted, dark shade		1 pick.
2 picks, 2/50's, worsted, medium shade	—	2 picks.
1 pick, 2/25 s, worsted, dark shade		1 pick.
2 picks, 2 50's, worsted, dark shade 1 pick 2/25's worsted dark shade 2 picks, 2/50's, worsted, medium shade 1 pick, 2/25's, worsted, dark shade	× 15 -	90 picks.
2 picks, 2/50 s, worsted, dark shade × 2=6 1 pick, 2/25's, worsted, dark shade 2 picks, 2/50's, worsted, medium shade × 2=6 1 pick, 2/25 s, worsted, dark shade	× 10 -	120 picks.
	Repeat of pattern	312 picks.

Finish Shrinkage at the fulling, 4 per cent clear finish 56 inches wide.

METHODS OF FINISHING WORSTEDS.

To obtain the best results in the finishing of worsted goods, an understanding of the nature of the wool used, in addition to a knowledge of finishing, is required. If a finisher possesses this knowledge, his operations in finishing are carried on with a pretty good understanding of what the results will be before he undertakes them, writes "Finisher" in the *Textile Manufacturers' Journal*. There is no chance work in finishing worsteds. It is not sufficient to know that worsted is made of combed long wool, and that woolens are made from short wool which is carded. It is necessary to know what is long and what is short wool. With the many improvements that have been made in combing wool, it is quite possible to comb wool and make the best of goods from it when it contains fibers as short as one inch; wool from six to ten inches long is regularly carded; wool of two and three inches is made into worsted yarn, while some woolens contain fibers six inches long. The finisher should therefore become familiar with the different grades of wool as applied to the particular line of worsteds his mill is manufacturing. He can then govern the gigging, shearing, etc., accordingly. For example, it is necessary to put less work on the shorter fibered goods, not only because such goods will not stand a hard gigging, but because they will finish satisfactorily with less work.

QUALITY OF THE STOCK

I would first of all ascertain just what kind of stock is going into the goods and would then sample it in the grease. I would find out the quantity of the wool and the properties of the dirt and grease contained in it. As all wool scourers know, and some finishers do not, all wools contain in their unwashed state potash and oil, varying in quantity and hardness with the different kinds of wool. It is the same potash and oil that keep the wool in good condition while on the sheep's back and answer for soap when the sheep are washed. If the wool were washed before sheared it would improve the color of the wool, if well done; whereas if not done at all the wool stored away in the grease is liable to become stained and will always have a yellow tinge. One evil of washing wool before shearing is that when the grease is removed the wool in time loses that silky feeling which is so useful in making certain goods. If it is yellowish, when it ought to be white, a different set of operations must be brought into play at the finishing. After it is dyed and worked it is pretty difficult to ascertain whether the wool was pure white or soiled yellow. Hence the need of looking it up in the sorting or wool scouring room.

COMPOUNDS FOR SCOURING WORSTEDS.

Carbonate of soda is often used in scouring worsteds; it is manufactured from common salt, sulphur, limestone and coal. Soda ash, soda crystals, etc., are composed to a large extent of this compound. Soda ash generally contains from 30 to 50 per cent, while soda crystals contain a somewhat less proportion. Silicate of soda is also a useful compound. Another is ammonia, which is a compound of nitrogen and hydrogen. It is prepared by the distillation of urine or gas liquor. As an alkaline agent it is mild in effect and valuable for scouring worsteds in the white state. When the worsteds are colored it is necessary to use it more carefully, as it is liable to alter the color.

The gigging of different pieces of worsted goods will depend largely upon the treatment in the previous processes. If the cloth, composed of yarns imperfectly twisted, has been brought pretty nearly up to standard body and weight, then the gigging need not be much changed, but if when the goods get to the gigs there is still a difference in the firmness of any one piece from others of its class, or of any lot of pieces from other lots previously finished, then the gigging process must be changed to suit the altered conditions. A loose-twisted yarn and a light, flimsy cloth will not stand the work that yarn and cloth of an opposite nature will, and it is advisable to gig slowly, and principally with old teasels, until the nap is laid.

In no business are the American characteristics of rush and push more manifest than in the manufacture of textiles, the one cry is "speed, speed," and in many cases *quality is sacrificed to this desire* for haste. Look at the work in a mill where this speeding process is carried on, it is simply ruined. The finishing is not half done. The manufacturer wonders at the end of the year, in making up accounts, why he has not made more money, failing to see that in his anxiety to get a large production he has in reality obtained less, and that of an inferior grade.

If you are working on cheap flannels or horse blankets, rush matters by all means, but my advice is that you go slow with costly worsted goods, particularly at the gigging.

—Ladies' cycling hosiery bloomers are finding a ready sale in some markets. Novelties are in demand in the knitting trade as well as in others.

—Golf jerseys, stockings, and socks are being embroidered after the Tartan fashion—the squares or diamonds being produced on the embroidering machine in sizes to suit the goods and prices.

—Covert cloth manufacturers have been using a brown specking ink in toning down light threads, and also to cover up all sorts of imperfections which have caused a deal of trouble to the clothiers. The ink has been put on in such an artistic manner that the most expert cloth examiner cannot detect it before the goods are sponged, but as soon as the steam is forced through these fabrics the ink spreads and turns very dark; consequently these goods are worthless. Clothiers have cautioned their inspectors to examine them after they are sponged, therefore manufacturers need not be surprised if a large claim is made or if their goods are returned.—*Ex.*

Foreign Textile Centres

MANCHESTER.—As usual, reports of transactions in the cotton section are unequal, and quite as frequently inaccurate. There is no more impossible task than that of gauging with any reasonable degree of accuracy the volume of business on the "boards" during the course of a single day Buyers will not reveal prices until the moment suits, and that is seldom on the day when the operations take place. The accounts to hand from the manufacturing districts vary in character, as usual, but there seems to be a pretty general concensus of opinion that business is slow. Sorting up orders have been received for Calcutta, but this is not surprising in view of the large shipments effected for that market during the past few weeks. In the linen branches, which are not represented here on any exchange, there has been rather more doing during the past few days, although there is a considerable amount of leeway to make up for owing to the falling off in shipments last year. Cuba is again very low down, and there is very little prospect of early improvement Recently attention has been largely directed towards India It is recognized that while existing troubles continue in the dependency it will be impossible to increase our business in the East The position gives much anxiety in many quarters. It is true that Kurrachee last week had large takings, but elsewhere the results were not as satisfactory as might have been expected. Spinners are placed in a more favorable position by the heavy arrivals of raw material, and holders are generally considered to prefer an outflow of their stocks. There is not much demand for Egyptian yarn, and prices are far from strong. In the cloth section there is a considerable amount of business going forward. The Canadians are buying freely, and I hear of a sale of 40,000 pieces of prints to one Montreal house alone.

BRADFORD.—The question of the advances in mohair which are already assured, and those which seem to be highly probable in the immediate future, are placing manufacturers here in a rather awkward position, as it has been almost impossible up to the present to obtain any advance on the established price of those styles of mercerised fancy dress goods which have been so largely in demand, although these are made from the best quality of mohair, and are heavy goods There is also a distinct development of fashionable taste in favor of the use of the finest plain black alpaca and mohair dress goods in the most expensive makes. As these goods lend themselves in a marked degree to the present styles of braid trimming, this tendency is likely to become more pronounced. Repeats for the United States in dress goods are quite as numerous as were expected, but the lining trade for that market is quiet, with the exception of cotton Italians, which are still being largely shipped The few orders which were given some weeks since in worsted coatings on American account do not seem to be followed by further business of importance, and as the raw material has advanced considerably, manufacturers would not now accept orders at the very low prices at which the first experimental lines were put through.

ROCHDALE.—At the flannel market recently a little more new business was transacted, as merchants' travelers are on their rounds and drapers' stocks are gradually being depleted The expectation that wool would go up in price has given increased confidence in the value of flannel, and there is an impression that manufactured goods will rise in the same ratio as raw material. In Yorkshire goods some improvement has manifested itself.

KIDDERMINSTER.—The tone of the carpet trade, while quite healthy, is somewhat quieter. The home market continues to yield many orders, but these are smaller in bulk than was anticipated. The improved outlook, consequent upon the changed attitude of the engineers, is making itself felt, although a feeling of uneasiness still exists as to the outcome of the disastrous struggle. The foreign markets are also declared to be somewhat obstinate. The disturbing elements in Spain and South America have retarded trade, while the Presidential election in the Transvaal has temporarily crippled commerce. One agent, writing to a large Kidderminster firm this week, declares that should Kruger be successful at the polls and still decline to carry out necessary reforms, a financial crisis will speedily arise. The declarations of Imperial policy made this week with regard to China give satisfaction to traders. What is needed is the freedom of the ports in the land of the Celestials. Should England complete the large loan now proposed, there can be little doubt that we shall be the "man in possession" for many years to come. Carpet manufacturers are doing all they can, not only to hold markets, but to open new ones, by catering for the increasingly varied tastes of the people. Quite recently we have seen several specimens of new fabrics made on the Jacquard and Axminster looms, and while some of the carpet has already got an introduction on the market, and meets with much favor, the developments have not reached such a stage that we can describe them in detail. In one direction the endeavor is to produce a carpet similar to the Axminster on the Brussels principle; while in another direction a carpet is being woven on the Jacquard loom giving the coloring effects such as has been only obtained in the Royal Axminster carpet. Our local manufacturers are determined to be in the vanguard with regard to improvements in the carpet trade. Spinners keep quiet, and in some quarters machinery is not fully employed. There is, however, a determination not to accept orders except at full quotations, and business is consequently not being forced. The East India wool sales at Liverpool this week are being well attended. There is a varied supply of raw material, and the hardening tendency of the London sale has had a stimulating effect at Liverpool. It cannot, however, be said, that quotations have actively advanced.

NOTTINGHAM.—Activity is again manifested in fancy millinery laces owing mainly to the placing of some big orders by a number of home-trade buyers. Even silk goods, which have long been languishing, have received attention, although it is a fact that the bulk of the orders secured has been for cotton and linen laces. Valenciennes in white, ivory and butter, with insertions to match, are in favor for export, as well as for the home trade. Torchon and Maltese laces, in linen and cotton, have much improved in tone, and some very good imitations of real lace are being produced. Linen shades are most required. Irish guipures and mixtures of fancy groundwork are moving well in the usual shades. Brabant, Bretonne and Malines are in request in white, cream and two tones for special markets. Honiton braids, linen tapes and silk, cotton and linen purls are also fortunate, but point de Paris and duchesse laces sell at present only for special markets. Oriental lace in white and butter are still in favor both at home and abroad, but the large supply of German goods makes it difficult for English manufacturers to make any headway. Cotton embroidery and Irish trimmings are inclined to dullness, but crochet and American laces have picked up considerably, and some decent orders have been placed for warp goods at long discounts. Manufacturers of caps, collarettes, aprons, blouses and ruffles are not fully employed at present, but a good business is anticipated on the latest novelties Falls and veilings are moving freely, but the available supply largely exceeds the actual demand. There is small inquiry for silk Chantilly laces and nets, and only a few novelties are being introduced, which by the way, have taken well. There is nothing new to report in regard to the plain branches. They continue to prosper, machinery is fully employed and manufacturers dictate their own prices. Orders for the popular qualities are in arrears and buyers are put to inconvenience Large quantities of fine tulles and heavy mosquito nets are used for embroidery purposes, and the exports are extensive There is an average demand for Mechlin and zephyr tulles, and point d'esprit nets. Heavy foundation nets are only in limited request. Corset, antique and other cotton nets are selling freely. Curtains, window blinds, furniture lace and also squares are moving in large quantities both for the home trade and for export The colonial demand for these goods is gradually expanding White and écru are principally required, but colored goods are produced for special markets. Dressers and finishers are fully employed with these goods Manchester reports a falling off in the demand for cotton millinery laces, but other classes of lace have been largely used for evening gowns Silk laces are rather quiet, but French makes have met with a fair amount of support There is a rather smaller demand for veilings, although Canadian and United States orders have been moderate

BELFAST.—This has been a quiet time in the linen market. Yarns are in poor demand, buyers only taking what is wanted for immediate needs. Prices are very low, and in the inferior qualities are in favor

of buyers. It is stated that spinners have for some time, in numbers of instances been working at a loss For brown cloth there is somewhat of an improvement in inquiries, and a few more orders have been placed Prices are too low to be very remunerative to manufacturers. It is anticipated that there will be an improved demand very soon, and that rates will, in consequence, make a move upward Thirty-eight-inch powerloom linens for bleaching continue to meet with a steady sale, orders to a considerable extent being placed for both boiled yarns and green yarn qualities. Cloth for dyeing and hollands are passing into consumption at a rate that about equals production. An improvement is noted in the demand for unions, and there is a prospect of a much larger sale for these goods Household goods and damasks are in moderate request at late rates. Handloom linens for bleaching are practically unchanged. Local stocks are moderate and prices firm. In the bleached and finished end of the trade there is somewhat more activity than has been observable for some weeks. The prospect of an end to the long-continued and disastrous dispute in the engineering trade has strengthened the market. Orders from the cross channel houses have come to hand to a fair amount. The shirt and collar trades are taking larger quantities of white linens, and tailoring linens also show an improvement in demand. There seems to be still some uncertainty as to what descriptions of linen goods will be most in demand. An attempt was made to produce very light weight goods so as to bring them under 1.35 per cent. duty, but the goods do not commend themselves for wear, and it is likely the former weights will be largely adhered to notwithstanding the higher duties. Continental trade is quiet, and hardly up to that of the corresponding period last year. The colonial and other markets exhibit no appreciable change. Local stocks and values are unaltered. Business in drapery circles is rather quiet just at present. The wholesale houses report that orders from the travelers are much as usual for the season, and the retail houses are endeavoring by winter sales to decrease their stock before stocktaking. It is officially stated that the result of the Russian flax crop of 1897 has been disappointing in most districts of the Empire. The area sown was considerably larger than in 1896, but the drought in June caused the plant to be stunted and thin, so much so, that at many points the crop yielded much worse results than in the previous year. The quality is generally very middling, and the fiber weak, with one or two exceptions.

LYONS.—The Lyons market remains fairly active, and the transactions showed a greater volume again There are no signs which would seem to indicate the necessity of greater life as no new orders have been received which would call for increased buying The mills are still busy on their old orders, finding difficulty in filling them in time, and before these are brought nearer to completion large new contracts for materials cannot be expected. The buying which is now going on is for unforeseen requirements, and it speaks well for the position of the market that the daily purchases retain such importance These, however, appear natural, considering the variety of fabrics required by fashion Alternately one or the other grade becomes more prominent and gains in price, but there is no danger of a radical change in the market from a decreasing demand for a particular style In this respect the present time differs greatly from former seasons, when the leading fabrics were produced by a few of the largest mills, which by large purchases caused a short-lived excitement in the market at intervals At present the demand is more divided, more regular, and not followed after each deal by a long period of dullness. All manufacturers are equally interested in its development, and its movements are evidently regulated by legitimate transactions. The greatest part of recent purchases consisted of French silk, with organzines more prominent than for some time. Asiatic silk did not lead to many deals on account of the high prices, but the great interest which is being manifested for these grades shows the firm hold which they have gained on the Lyons market. It is unmistakable that the improvements made in reeling Asiatic silks have greatly enhanced their value, and that their fitness for grege weaving has materially contributed to the enormous increase in the production of piece-dyed fabrics. The demand for them keeps increasing, and it appears inevitable that with small and badly assorted stocks these grades will reach still higher prices.

MILAN.—The situation in Milan remains very satisfactory; deals were not so very numerous, but prices are firm, and as holders are by no means pressing in their offers, an advance of ½ lire occurred. Buyers are trying to replace the Asiatic grades by those of European origin, as holders of the former are increasing their pretentions on account of the difficulty to replace their stock in choice grades. The reports from the far East appear to cause uneasiness regarding the supply of best grades, although the information regarding the present stock does not imply such a contingency. Stocks in Yokohama have seemingly somewhat increased lately, but still amount only to half of the quantity at the same period last year. The settlements for the present season have been much larger than in any previous year, and it appears that many bales are now coming forward on account of the favorable state of the market, which in other years would have been kept back for the home industry This impression is confirmed by the reports that fine grades of silk are very hard to procure, and that high prices have to be paid for anything really choice It is concluded that the larger stocks in Yokohama contain many bales which are actually not suitable for export to foreign countries, and holders here for that reason prefer to keep back their goods for larger profits later on Turin reports a similar state of affairs; the demand was good, but actual deals only limited on account of the high pretentions of the holders. Several efforts to secure lots of some importance failed for this reason, and most transactions were only for small quantities, for which the full prices could be paid. Some lots of greges which had been held for a long time were cleared, the holders being content with the present profits.

ZURICH.—The Zurich market showed more animation than during the last few weeks, and a further advance in the prices can be reported. Some important contracts were made for best organzines and Japan trams; a general buying for all the different grades developed. The purchases in silk for immediate delivery were not voluminous, nor did they appear to be urgently required, but rather disclosed a tendency on the part of the mills to partly provision themselves in view of possible further advances. The sentiment has evidently changed, and the former policy of hesitancy and waiting has given way to a feeling of anxiety not to be unprovided when a new movement begins. It is obvious that not lower but higher prices are generally expected, and a certain amount of nervousness is manifesting itself.

DYEING BLACKS.

W. J. Matheson & Co. call the attention of the trade to the advantages of dyeings produced with Diamine Jet Black, pat. and Oxy-Diamine Black, pat. topped with One-Dip Aniline Black. They claim that dyeings produced in this way possess the following advantages over those produced by the ordinary one-dip Aniline Black processes: Considerably improved fastness to rubbing. Perfect uniformity of the resulting shades. Considerably improved spinning capacity. Improved sizing facilities. In brightness and depth of shade they are equal to oxidized Aniline Black, and the fastness to washing and acids is so excellent that they can be used for both yarn and warps.

The method of dyeing is as follows.—The yarn is dyed at the boil in the usual manner with about 3 per cent Diamine Jet Black, pat., or Oxy-Diamine Black, pat. with the addition of 7 grams soda, 3¼ ozs. Glauber s salt per gallon of water It is then entered into a cold bath of 4 lbs. aniline salt (dissolved in water), 9 lbs muriatic acid 18° Be. (diluted with water), 3 lbs sulphuric acid 66° Be (diluted with water), per 100 lbs. of yarn, and then 3 lbs bluestone (dissolved in water), 5 lbs. chromate of sodium (dissolved in water), per 100 lbs. of yarn Turn for three quarters to one hour, raise slowly to the boil, wash, and soap in a solution of one-third oz. soap per gallon of water

Loose cotton requires 5 lbs. aniline salt per 100 lbs material, the same quantities of the other ingredients being used as for yarn. While the aniline bath is cold, it should not contain more water than is absolutely necessary, about 10 to 14 times the weight of the goods being sufficient, but this quantity should be increased to 18 to 20 times the weight of the goods when the temperature is raised.

Geo. Reid, who is well known to the manufacturing trade in Canada, and has been successfully carrying on the business of the Paul Frind Woolen Co., Duke street, T... to, has changed the style of the firm to Geo. Reid & Co., and will hereafter carry on the business under that name.

LEVEL DYEING.

The following circumstances favor level dyeing: (1) Old dye liquors, i.e., baths that have been already used several times for dyeing. It is an acknowledged fact, which has been proved again and again in practice, that it is possible to obtain much more level colors in old dye liquors than in fresh ones, although the cause has not yet been satisfactorily explained It is no doubt probable that the accumulation of Glauber's salt in old baths has considerable influence in the matter, and promotes level dyeing; but in addition to this it would appear as if there were other influences at work, which are at present unknown (2) An increased amount of Glauber's salt. The Glauber's salt employed when dyeing in an acid bath performs a very important function: it regulates the equal distribution and absorption of the coloring matters by moderating the action of the sulphuric acid This last assistant is employed in order to liberate the color acid, and thus to induce and increase its attraction by the fiber, but the simultaneous addition of the Glauber's salt causes a portion of the coloring matter to remain in the bath, and so retards its absorption. Moreover, it exercises a solvent action on the particles of coloring matter that have already become fixed; it abstracts them from those parts of the wool that in the beginning took up too much coloring matter and this being now returned to the bath, an opportunity is thus afforded *to those portions which at first attracted too little coloring* matter of taking up the excess removed from the darker portions. An increased amount of Glauber's salt is employed when dyeing level shades, and when using fresh dye liquors or such coloring matters as dye level shades with difficulty. further, in the case of thick, closely woven or heavily milled goods, in order to dye them well through—and indeed whenever the dye appears irregular—it may be usefully employed as an after-addition. (3) Reduction in the amount of acid, the use of weaker acids. The sulphuric acid liberates the color acid of the coloring matter, in which it is combined with soda or lime, and thus permits the attraction of the dyestuff, i.e., the union of the color acid with the wool. This takes place all the more rapidly the more completely the color acid has been set at liberty, and, on the other hand, more slowly if the bath is less acid. If the dyeing is being carried out with coloring matters that have a great affinity for the wool-fiber, so that the latter readily dyes unevenly, it is advisable to diminish the amount of sulphuric acid, and instead of 4 per cent. to use only 3 per cent. or 2 per cent., or, instead of this, weaker acids, such as hydrochloric, oxalic, or acetic acid, should be employed. Another method frequently adopted is to add the acids to the bath gradually, in small portions at a time, so that the color acids are liberated and attracted by the wool by degrees: or again ,with many coloring matters, a portion may be added afterwards, or, in the beginning, a weak acid like acetic acid is added and only afterwards the stronger acid. Another method, employed in the case of many coloring matters, is to cause the necessary acid to be gradually generated in the bath itself, by using acetate, oxalate, or sulphate of ammonia, these salts gradually decompose during the boiling of their solutions, with evolution of ammonia, and thus acid is slowly liberated in the bath, and causes the coloring matter to be taken up by the wool. (4) Entering the goods at a low temperature. The union between the coloring matters and the wool-fiber takes place more rapidly the higher the temperature of the dye-bath, even up to the boiling point: hence with coloring matters showing a tendency to produce uneven dyes, the goods are entered at a medium temperature, or even cold, and the bath is heated to the boiling point gradually, the dyeing process being completed by continuing to boil as long as necessary. By this gradual raising of the temperature of the bath the affinity between the fiber and the coloring matter comes into play only by degrees, that all parts of the fabric have, as it were, an equal chance of attracting dyestuff. Nevertheless, there are coloring matters with which these measures of precaution are useless: for example, Victoria violet 4BS and 8BS, azo acid blue B, azo acid black G, B, R, and azo yellow C on C, dye much more level shades if the goods are at once entered into the boiling bath, the boiling being continued until the dyeing is completed. The larger the quantity of coloring matter presented to the fiber, i.e., the fuller or deeper the shade required, the more likely is it that all parts of the fabric will be equally and unevenly dyed: pale fancy shades are consequently more difficult to obtain level than are medium and dark shades, because not only is the amount of coloring matter presented to the fiber comparatively small, but it is almost always necessary to make further small additions of dyestuff to the boiling bath. In the case of dark shades, therefore, it is quite possible to use even those coloring matters which tend to dye unevenly; but if additions to the bath have to be made at the boil, for the purpose of matching and when dyeing pale fancy shades, it is imperative to employ only those dyestuffs that give level colors without any difficulty. Other circumstances and conditions of working being equal, the tendency to dye level shades depends upon the nature of the coloring matter itself: hence some acid colors may be spoken of as "level-dyeing colors," while others cannot be referred to as such.—*Ex.*

SOAP AND COTTON MIXTURES.

Soap-making in the industrial processes is a matter that *has a wide and important bearing on the good appearance of* the cloth. No cloth can be well handled unless the soap is so made as to be particularly adapted to its own peculiar needs. One of the mistakes of the mills of to-day which turn out such wide varieties of goods is to imagine that they can all be successfully treated and finished by the use of the same grades of soap, says a writer in *Textile Colorist*. One of the great advantages which follow where the finisher makes his own soaps is just this. that he can make his soap exactly to suit the particular goods he has to handle.

Of all the cloths which require an abundant and liberal treatment of soap in their preparation for the market, none are more perplexing than mixtures of various kinds. If we take the high grade cloths, woolen or worsted, or mohair, or of any cognate kinds, and once we get the goods suited to the grade, we know at once where we stand, and can reproduce results at any time. Not so with the mixture. Cotton and wool, cotton and worsted, wool and silk, all demand careful and specific kinds of detail, and the soap that meets the requirement in one mixture of certain proportional quantities of the two fibers will have to be altered materially before it will do to use it with another mixture of the same fibers, but in different ratios of mixtures.

Besides the mixture feature, the color question also enters into the complication. If the mixture is of delicate shades or of fugitive colors, then the soap problem is considerably enlarged. It is to a class of goods of this description, which is in common demand to-day, that we wish to refer: Cotton-mixed worsteds, or worsteds made with a certain proportion of cotton in the construction, and thus, too, in delicate colors. Here we have a topic of interest to every maker of low-grade worsted cloths.

The action of a soap consists practically in loosening up the dirt and grease from the wool fibers so that water rinsing will be able to remove them. The loosening is accomplished by direct action, and also by the ingredients of the soap uniting with the ingredients of the dirt and forming new compounds which then are removable by ordinary means.

To accomplish this action there must be certain substances in the soap which serve to bring it about. These are two, (1) alkali, (2) free caustic. If the mixture is in delicate colors the latter of these two materials is very apt to lead to trouble. To work with any degree of safety the great need is a neutral soap, one which does not contain any of the free caustic whatever. If the caustic is present it can generally be detected by

the taste, the peculiar sharp, burning sensation that it causes being very noticeable.

If we are going to have the work come out right we must also have a soap of light body. The great demand in the cotton-mixed worsted is freedom from felt—felt makes the cloth stiff and heavy. For that reason the soap must not be of heavy body, as the heavy soaps always hold and act on the fibers with great effect. Take a good palm oil soap and if it is of pretty fair quality one ounce of it to the gallon will work all right. If we wish to add to the effectiveness of the soap on this grade of cloth without injuring the results, we may use sal ammoniac in the proportion of about 1½ pounds of the latter to 50 gallons of the soap. If the soap employed is of less consistency than the palm oil soap it will be necessary to use a little greater proportion of it to the gallon, but not much. The particuar condition of the cloth will regulate this entirely.

As regards the alkali that is to be put in the soap for these goods we would first say that it must be of the mildest kind. Unless colors are regularly and really fast, the alkali will surely attack them in the cotton. Sal soda is about as good as any for all purposes, and six ounces of it to the gallon will be the amount needed. This soap-making is simple. Dissolve the soap and then add the alkali. Boil the mixture for a couple of hours, then allow to get cold before using. After it has cooled the sal ammoniac is added, and it is ready for use. Warm soap may be preferred, but it is really not as safe as the cold when dealing with worsteds with almost all the warp of cotton and with the colors at all inclined to be delicate. Now soap made in this way, when run on the goods about three pails to the piece, ought in twenty or twenty-five minutes to lather up nicely. In case the lather does not form well, better add another pail of the soap, and if all has been done in the cool there will be no danger from colors being attacked. Take five or ten minutes more and the cloth will be ready for rinsing. Cold water for half an hour ought to take away all soap traces. And if we want a really good result, after the cloth is drained pour on two pails of salt water made from a peck of salt in a barrel of water. Five minutes in this will give brightness and permanence to the colors and clear and clean up the goods.

It is possible that there may be cases where the colors are so very delicate that they will not stand the use of soap at all; if this is true, the only method is to use fullers' earth as the cleansing agent.

WOOL DYEING.*

APPLICATIONS OF YELLOW DYESTUFFS OTHER THAN OLD FUSTIC.

There is much similarity between the shades produced by the various dyestuffs, weld, quercitron bark and flavine, Persian berries, and young fustic—and their application may, therefore, be conveniently studied together. The precise tints and the properties of the colors vary, however, with different coloring matters, as will be seen by the following notes:

Tin Mordant.—All the dyestuffs under notice produce bright yellow or orange shades with tin salts, and it is indeed with this mordant that most of them are chiefly employed.

Weld produces the greenest and purest yellow, but it is somewhat inferior to that obtained with alum mordant.

Quercitron bark and flavine give much more orange yellows than weld, while Persian berries and young fustic give full orange shades. It should, however, be noted that flavine is also capable of producing full orange shades, if a sufficient amount of the dyestuff is employed. In all cases the "single-bath" process of dyeing should be adopted, and the amounts of mordant, etc., required for full shades are about as follows:

Stannous chloride	5 per cent.
Cream of tartar	4 "
Oxalic acid	2 "

*Walter M. Gardner, F.C.S., Head of the Chemistry and Dyeing Department of the Bradford Technical College in the *Textile Recorder*.

with the necessary quantity of dyestuff. If the bath contains an excess of acid, the shades are dull and lack intensity, but on the other hand, a deficiency of acid results in the superficial deposition of the color-lake, and the color will "rub off." A certain amount of free acid is therefore necessary in order to bring the color-lake into solution. Flavine is the dyestuff chiefly employed in this manner for the production of yellows, and also for correcting the somewhat bluish tone of cochineal scarlets. For this latter purpose young fustic was at one time much used, but it is now practically obsolete.

Aluminum Mordant.—Amongst the natural yellow dyestuffs weld is noticeable as producing with this mordant a bright greenish yellow, which retains its true color in gaslight. It is also at the same time the purest and fastest yellow which can be obtained from natural dyes. On this account weld is still employed to a considerable extent, especially in Government contracts, which frequently specify its use for dyeing the yellow braids used for trimming uniforms, etc. It is also much used in conjunction with vat indigo blue for the production of certain shades of green (carriage greens) which it is not easy to obtain, equal in fastness, in other ways. The "two-bath" method must be employed for weld yellows, the best results being obtained by mordanting with about 12 per cent. alum and 6 to 8 per cent. cream of tartar. The alum must be absolutely free from iron. It is also necessary to add to the dyebath a sufficient amount of chalk to neutralize all acidity of the cloth after mordanting, about 4 per cent. being usually required. The other natural yellow dyestuffs are not used to any extent with alum mordant, the shades being much duller and browner than weld yellow.

Chromium Mordant.—All the yellow dyestuffs yield brownish yellow or "old gold" shades with this mordant; weld giving yellower (less brown), and the other dyes browner shades than Old Fustic. Persian berries and Young Fustic give very reddish browns. With the exception of Young Fustic all the dyestuffs produce shades which are fairly fast to light, but none of them show any definite advantage over the cheaper Old Fustic.

Iron Mordant.—Applied in the manner described under "Old Fustic," all the dyes under consideration give greenish or brownish olives in conjunction with iron mordant, but probably none are in practical use.

Other Mordants.—With salts of manganese, nickel, and cobalt, the natural yellow dyes give dull olive or brownish yellow shades which do not appear to have any importance. It is interesting to note that in this, as in most cases, nickel and cobalt when used as mordants behave in quite a different manner to iron. With uranium sulphate brownish yellows or oranges of considerable brilliancy and intensity are obtained. Generally speaking, however, the shades are similar in character to those produced by chromium, and offer no advantages compensating for the use of the more expensive uranium salts.

COCHINEAL, KERMES AND LAC DYE.

Unlike other important dyestuffs, these three coloring matters are animal products, being obtained from three species of the group of insects known as coccinae. The two last-named are now practically obsolete, but as a matter of historical interest, a few notes respecting them will be given.

KERMES.

This dyestuff is of great antiquity, being in use by the Hebrews, and mentioned by Moses, their earliest writer. It seems probable that the Hebrew word several times translated "scarlet" in the Old Testament (Exodus xxvi., xxviii., and xxxiv.) was used to designate the blood-red color produced by kermes with alum mordant. This was one of the three colors prescribed to be used for the curtains of the Tabernacle, and for coloring the "holy garments" of Aaron. The term "granum," which was given to kermes by Pliny, probably on account of its resemblance to a grain or berry, was adopted by more recent

writers, and is the origin of the term "ingrain color," which is even now in use. Our words "vermilion" and "crimson" are also derived, respectively, from the old Italian words, "vermiculus" and "cremesimo," the former of which signified the kermes insect, and the latter being probably a corruption of the original Arabic kermes or kremes. Coming to later times, we find kermes in general use as a dyestuff in Europe as early as the tenth century. "In Germany, from the ninth to the fourteenth century, the serfs were bound to deliver to the convents every year a certain quantity of kermes amongst other products of husbandry. It was collected from the oak trees on St. John's Day, between the hours of eleven and noon, with religious ceremony, and on this account it received the name of 'Johannisblut' (St. John's blood. At that time a great deal of German kermes was sent to Venice to produce the 'scarlet' to which that city gave its name." About the year 1550 cochineal was introduced into Europe, and since it is far richer in coloring matter than kermes, it gradually superseded the older dyestuff, which has not been used to any extent in this country for at least 100 years. It is, however, still employed in some countries, to which it is indigenous, e.g., Italy, Turkey, and Morocco. Kermes is derived from the insect Coccus ilicis, which is found principally upon the Quercus cocci fera or Ilex oak. The dyestuff is formed in a similar manner to cochineal, and is also of similar appearance, but it contains only about one-tenth as much coloring matter, which is probably identical in chemical composition with that of cochineal.

One peculiarity of kermes is that it possesses a pleasant aromatic smell, which it also imparts to cloth dyed with it. It is employed in exactly the same way as cochineal, and it has been frequently stated that it produces more permanent colors than that dyestuff, but there does not appear to be any foundation for this assertion.

LAC-DYE.

This substance, in the natural liquid form in which it exists in the lac cells, has been used by the natives of India and Persia from the earliest times. It was introduced into Europe about the end of the last century by the East India Company, and a good deal of the credit for its successful practical application is due to Bancroft. Like cochineal and kermes it is produced by a scale insect, being prepared along with shellac from incrustations formed by the coccus lacca upon juniper and other similar trees. The incrustation is of a cellular character, each female insect forming and inhabiting a single cell, which is evidently intended for the protection of the eggs. The agglomeration of an immense number of these cells results in the smaller branches becoming thickly coated with the incrustation, and, when removed from the trees, these twigs are known as "stick-lac." This product, therefore, consists of (1) woody matter, (2) the resinous matter forming the cells, and (3) the coloring matter. By passing between rollers the incrustation is readily separated from the twigs, and is then known as "seed-lac;" but no definite information regarding the preparation of lac-dye from this body is available. The resinous lac may be removed by heating the seed-lac until it melts and then straining through a canvas cloth, and it is known as "shell-lac," "button-lac," "garnet-lac," etc., according to its mode of preparation and color. It is one of the most valuable of the resins, and is largely employed in making varnishes, lacquers, stiffening for felt hats, etc. Lac-dye is usually imported, chiefly from India, in the form of small flat cakes, about 2½ inches square and one-half inch thick, or as a powder. It is quite insoluble in water, being a calcium, aluminium, or tin lake of the coloring matter, and, therefore, before use must be treated with hydrochloric acid in order to remove the metallic base and liberate the soluble coloring matter. In other respects its application is similar to that of cochineal, but it does not produce such brilliant scarlet shades as that dyestuff. Its coloring power is from one-half to one-third of that of a good sample of cochineal.

COCHINEAL.

This dyestuff is indigenous to Mexico, where it was found to be in use by the natives when the Spaniards first entered the country in 1518. Recognizing its importance, they quickly commenced its cultivation; and it was exported to Europe about 1550, where, as already mentioned, it quickly superseded kermes. The insect known as cochineal is the Coccus cacti (Hemiptera). It feeds on various species of Cactaceae, more particularly on the Mexican "nopal" plant (Cactus opuntia or C. coccinilifera). The male and female insects are very dissimilar in appearance, the former being slender in form, red in color, having a small head, two horizontal wings, six legs, and two long diverging hairs projecting from the abdomen—altogether a graceful and active creature. On the other hand, the female insect, which is much the most numerous, is similar in appearance and size to the "lady-bird." Its body is hemispherical, and of a dark reddish-brown color; it has six rudimentary legs, but no wings, and is practically incapable of moving about.

ART AS APPLIED TO EVERY DAY LIFE.*

I shall attempt to point out the relation of art to the every-day life of each of us; and especially the influence that the Lowell Textile School is bound to have upon the art sentiment not only of Lowell, but also of the whole United States. There is an erroneous idea prevalent that art is painting, and for the few. Now, strictly speaking, painting is only a part of art, and art is, most emphatically, for us all. Painting is a phase of art, grown out from, closely associated with, and indeed dependent upon architecture. Decoration, which is the application of design and color to the surface of something else, grew out of architecture, and painting is the outgrowth of decoration. The painter may claim that he is independent of architecture. But where would he place his paintings when he has created them, if there were no walls upon which to hang them? And what is the gilded frame that surrounds his work but a piece of architecture? Architecture, decoration and painting, are all a part of the great subject, art. We are all bound to come in direct contact with its immeasurable influence to a greater or less degree. The houses we build, the clothing and jewelry we wear, curtains, carpets, furniture and household utensils, are included in this great subject, in which we all have a share. In these days, there is scarcely an object or utensil, even in the poorest homes, that has escaped a decoration of some kind, from the legs of the stove to the bric-a-brac on the mantel. The popular desire for decoration has led manufacturers to place it upon everything, and it is generally understood by them that anything that lacks it will be a drug on the market. The fact that the manufacturers are not artists—and by that term I do not mean painters, but men trained to a knowledge of the laws that control art, and especially decoration—and the fact that the tastes of the people have not been cultivated has, unfortunately, led to a manufacture of extremely inferior productions.

The manifestation on the part of the people of a desire for artistic things, is, however, a good sign, and will surely lead to a new period of art in this country, which, I believe, will be as great as any that has occurred in Europe. An American renaissance, or, as the word implies, a re-birth of art. In fact, I believe the tide has already set in, as shown by the great improvement in our architecture, and the decoration of our public buildings, during the last few years I also believe that the innate taste of the people, and, I may say, especially of the women, is excellent, and they need but to be shown the best, to quickly appreciate and desire it. The desire for art is one which comes only when the necessities of life are provided for. Like music and poetry, we appreciate it most when we are well clothed and well fed.

*Paper read by Vesper L. George, of Boston, Mass., before the Lowell Textile School, Lowell, Mass.

The question arises. What is good? What is the best? That brings me back to the beginning of my story, and I will try to point out to you what makes a thing good, and how you may cultivate a knowledge of these things. For, in this, as in music or literature, it is only by cultivating our tastes that we arrive at that point of sensitiveness that our discrimination will be our safeguard. There are some things that are unquestionably bad while others are unquestionably good. We may familiarize ourselves with these, and by that time we will be on a plane where our judgment will decide technical points that could not have been reached by any other method. The art of decoration presumably began in some such way as this. One of our ancestors, dressed in a few feathers or the skin of some wild beast, sat upon the bank of a stream bathing in the sunshine. He had had his breakfast of uncooked venison and was at peace with the world. His physical wants satisfied, his aesthetic instincts began to waken, and having his paddle and stone knife at hand, he cut a notch in one with the other. Being pleased with his newly-found power, he repeated the notching until he had gone entirely around the handle of his paddle. Delighted with his effort, he showed it to his companions, who praised his work and made bargains with him to treat their paddles in like manner. The love of praise is as old as man, and in this case, probably led the savage (with the added incentive of reward) to do his best on the other paddles, with the result of improving them by varying his motives. For instance, he found that two notches and a space, was more interesting than simply a series of notches: that two notches, a space, then one notch and a space, was still more interesting because it gave variety. And so from this simple beginning decoration has gradually evolved, first by notches, then lines, and lastly circles, until it has gone through every race and every nation and developed the exquisite variety of line, form and color that delights our eyes in the architecture of the Greeks, the decorations of Michael Angelo and Raphael, the magnificent Gothic and Romanesque cathedrals of Europe, and the rich and elaborate textile fabrics of every nation under the sun.

For the sake of convenience, we will divide the whole subject of historical ornaments into three great periods and subdivide each of these into three more. Ancient—Egyptian, Greek, Roman, Mediaeval—Byzantine, Saracenic, Gothic; Modern—Renaissance, Zuque Cents, and Louis Quatorze. This does not include it all, but it covers the largest and most important periods and connects them in such a way that it is easy to see the development. Each of these divisions could be divided and sub-divided, and those who care to pursue the study further would be interested to see how each style was influenced by the preceding, how some developed and improved, while others deteriorated, and produced a debased art, that we must also recognize so as to avoid. I will point out to you the striking characteristics of each style, in a few words, and then show, if possible, their influence upon each other and their bearing upon the art of to-day.

The two most notable things about the Egyptian art are the originality manifested and the symbolism that characterized everything. They took the natural forms found in Egypt, especially the Nile, and, selecting them for their symbolic meaning, adapted them to the necessities of their decoration. The lotus, which was one of their commonest motives, grew in the waters of the Nile. The lily depended on the Nile for its presence, and the Egyptians depended upon the rising of the river for their crops, so the presence of the lily was a sign of plenty to them. The Scarabaeus, or winged beetle, so common to them, was an emblem of divinity. The winged globe was a talisman, or sign of good luck. The wings symbolized providence; the globe, the sun, and the two asps, dominion and monarchy. The whole signified the creative, protective, and distributive powers. The Egyptians never used realistic or naturalistic treatment in their art. They chose to use the type of the thing rather than the thing itself. This point is worth noticing, as the question is constantly arising as to whether or not it is good taste to use naturalistic treatment. But I will speak of that later.

Greek Art.—While this doubtless derived much of its foundation from the Egyptian, it was most elegant and refined. Here, delicacy and refinement of treatment, careful study of proportion and infinite care produced an exquisite art, that is, to-day, a model of all that is best in architecture, sculpture and decoration. Notice, here again, we have the conventional treatment, the suggestion, rather than the thing itself. Even in their sculptures, they did not try to reproduce natural deformity for the sake of truth, and their statues were types of the very best, and idealized the forms they chose. The acanthus leaf is another familiar motive, although it is used in greater profusion in Roman art.

Roman art is a further development of the Greek, not, however, a higher development. The Romans made great scrolls and covered them lavishly with acanthus leaves. Indeed, scrolls heavily laden with acanthus leaves surrounding a rosette, have become a sign of recognition. This heavy ornamentation soon became monotonous. Their only originality was manifested in their development of the forms borrowed from others. They invented no new motives, consequently Roman art soon began to deteriorate into the less attractive style known as the Romanesque. The arch is, perhaps, an exception to the above statement, and is quite significant of that order. So much for Ancient Art.

Of the Mediaeval period, the Byzantine comes first. This art was a religious and symbolic art in which the motives used by the Romans were adapted to the uses of the Christian Church and interwoven with the emblems of their religion. The trefoil and quatrefoil, emblems of the Trinity, and the four evangelists: the cross and the serpent are commonly seen. The acanthus leaf is an ever-present motive, although its treatment is so changed as to be scarcely recognizable, being pointed now, rather than rounded in its form.

The Saracenic Art illustrates a marked change in style. The Arabs had no decoration of their own, and could not have been other than astonished at the magnificence of the cities that fell into their hands, as conquerors, in the 7th century. They immediately appropriated the talent of the Byzantine artists, to build and decorate mosques and castles for themselves. The laws of their religion forbade, however, that they should use any natural forms, and so the ingenuity of the artist was taxed to create a style that should depend entirely upon geometric form and on color for its effect. The result was a delightful theme in diapers and interlacing with rich and gorgeous colors. Gold was used profusely, and the decorations were worked much in relief with stucco. The Alhambra in Spain, built by the Moors, is an excellent example of this style.

The third of the Mediaeval styles is the Gothic, which is practically a religious style, having grown out of the Christian Byzantine, and is best illustrated in the cathedrals of Germany, France, and England. The arch, known as the Gothic arch, is a strong characteristic, although other forms are common. The trefoil and quatrefoil are also typical forms. Its exquisite window tracery, built on geometric forms, is a strong mark for recognition.

After a period of inactivity, art took a new life in the Renaissance. As the epidemic spread over all Europe at once, we have what is termed Italian Renaissance, French Renaissance, German Renaissance, etc. It was a revival of art, and was, in its best development, an entirely aesthetic style. Here, natural forms were used, and flowers and fruits cut in bold and realistic relief. Elaboration and richness held sway. Foliage and tracery were used in profusion, animals and figures were also introduced. Much of the motive was meaningless. The laws of balance and growth were at first ignored, and it was not until the influence of Greek art was brought to bear upon this style, that it became transformed into a beautiful and permanent one.

Conventional treatment was introduced, and law and order reigned. Then it was that the Renaissance developed into that refined style, known as the Cinque Cento, or that which was in vogue in the 16th century.

The Cinque Cento is really the goal of the Renaissance—its most refined development. Here the laws of conventionality, balance and harmony were recognized, and the mind, through the eyes, was satisfied. Natural forms were not used, but the type of that form treated in a conventional way. Unfortunately this high standard was, however, soon lowered by a neglect of those fundamental principles upon which all art must be built if it hopes to be permanent.

The Louis Quatorze was a style in vogue during the reign of that monarch, and depended for its effect entirely upon light and shade. It had, therefore, to be constructed in relief with stucco. The scrolls, shields, medallions and floral decorations were all built out in strong relief. Gold was used profusely to help accent the lights and give sparkle to an already fantastic treatment. While this style had much to recommend it, in spite of its vices, it soon deteriorated into the well known but debased Rococo, where every law of order was ignored and artistic impulse ran riot.

Now then, what do we learn from studying this evolution of decoration? We see that one style grew out of another, that it was modified more or less as it grew, and that it improved or deteriorated. We find that the Egyptian, Greek and Cinque Cento have about them a simplicity and permanent quality that stamp them with a superiority over the others. We also recognize that the Roman and Romanesque are inferior to the Greek from which they were evolved: that the early Renaissance was inferior to the latter or Cinque Cento period, and we ask ourselves, why these differences?

The reason is that the authors of the three styles mentioned appreciated the fact that decoration is at its best when it recognizes rhythm, that there must be poetry and music to it. Indeed decoration is to art what poetry is to literature. The Romans borrowed of the Greeks, but how? They simply copied motives without endeavoring to find out what laws controlled their construction. The designers of to-day make the same mistake. They appropriate the ornament that pleases them from this style or that, and even mix them in a most absurd way

(To be continued.)

SALABLE KNIT GOODS.

It is folly to knit up good yarn on a fine frame, and then finish the garments as though they were of a coarse, or medium grade—14, 16, or 18 gauge; for it is quite as easy to make a fine gauge garment as almost any other, only greater care must be exercised, and should be from first to last, writes an old superintendent, in the *Textile World*. What I mean by a gauge is so many needles to the inch, and do away with the old rule of so many needles to the three inches, for the moulds for spring-bearded needles, or the tricks in the cylinders, should be made exact. Then manufacturers would know what gauged frames they were using. The yarn must also be of the right size, or weight, with the right number of stitches per inch, so the goods will be firm and elastic, which is essential. Such goods will be in demand.

Seam and trim them in the best manner possible, using machines that will make a good elastic stitch, nothing under 18 per inch, using No. 60, six-cord, soft-finish cotton thread. Set the trimmer as close as possible, being particular that seams are neat and straight. Then with the new overseaming machine, which makes a concealed stitch, and a moderately loose tension, so the seam may be covered, and the stitch not break.

The finishing, also, must be of the very best—neatly and tastily done from start to finish, with trimmings and thread to correspond with shade and grade, and quality of goods. These few points are very essential to the marketing of the goods, and none knows that better than the one who is traveling to sell them. I have known it to occur where orders for goods were lost simply on account of improper attention to some of these points. None but the very best finishers should be allowed to work on high-grade goods, and they should receive a fair remuneration for their labor.

One thing more I would suggest to manufacturers to do, which is not often done, and which it would be well to follow. It would save considerable time, when looking after goods of different shades or grade. If they are colored, it would simplify matters considerably, to have the paper box covered with the same shade of colored paper, or like the trimmings. For instance, a customer enters a store, and asks for a scarlet, or natural wool shirt, or some other kind, as the case may be. The merchant at once, in looking around, will at a glance know whether or not he has such, for all the shades or colors of underwear can be seen on the boxes, and the merchant could arrange them on his shelves to make them attractive, for good buyers are generally of quick perception and good taste, and goods made and put up after the above suggestions, will attract attention, besides giving the purchaser a good presentable article. This, from an old manufacturer, may seem a little foreign, but fifty years in the trade with my eyes open, warrants what I have said.

PROCESS OF DYEING MIXED GOODS.

A dyer in Manchester, N.H., has invented a process for dyeing mixed goods composed of animal and vegetable fibers, designed especially for dyeing mixed goods a fast black on both fibers, which is described in a contemporary. The mixed goods are said to be dyed a deep, rich and superior black, fast to light and perspiration, without injury to the fibers—that is, without tendering the cotton and without impairing the gloss and elasticity of the wool.

The wool fiber of the mixed goods is dyed after the manner now commonly practiced in wool-dyeing, by immersing the goods in a vat or kettle containing the dyeing solution, and after boiling a predetermined length of time the dyed goods are removed, washed well and preferably dried. The cotton fiber is unaffected during the dyeing of the wool, and is dyed, in accordance with this invention, by padding the partially dyed goods with an anilin black mixture or liquor and when padded with the anilin-black liquor the goods are dried, and the anilin-black is then developed in an anilinager, and washed. During the process of dyeing the cotton with the anilin-black the color of the wool is not affected, and, further, the wool fiber is not injured—that is, its elasticity and gloss or lustre are not impaired, and so also the cotton fiber is not tendered during the two operations. In order that the invention may be more clearly comprehended, we will give more in detail the process for dyeing mixed goods a fast black, and will enumerate one set of chemicals and proportions with which the inventor has secured excellent results.

For five pieces of mixed goods, each fifty yards long and thirty-six inches wide, there is employed for the wool dyeing a bath made up a follows. To a quantity of water usually employed for dyeing the amount of cloth specified, about one hundred to one hundred and fifty gallons, which is placed in a dyeing vat or kettle of usual construction, there is added one pound, twelve ounces of so called "alizarin-black," fifteen pounds of bisulfite of soda, and one pint of lactic acid The mixed goods to the amount above specified are immersed in the dye bath after the latter has reached the temperature of from 60° to 70° Fahrenheit. The goods are subjected to a gradually increasing temperature for about forty-five minutes, at the end of which time the bath is raised to the boiling-point, and maintained at the boiling-point for the further time of about forty-five minutes, during which time the wool fiber is thoroughly dyed a deep black fast to light and perspiration. The goods are then removed, washed well, and preferably dried During the dyeing of the wool the cotton fiber is not dyed but may be stained. To dye the cotton fiber of the partially-dyed mixed goods, there is employed an anilin-black mixture or liquor, preferably made up of two parts, as follows Boil eighteen pounds of corn starch in twenty-two gallons of water, and add a solution of forty-eight pounds of yellow prussiate of potash and twenty-two pounds of sodium

chlorate in twenty-three gallons of cold water. This constitutes part No. 1 of the anilin liquor Part No. 2 is made by dissolving one hundred and sixty pounds anilin salt (hydrochlorate) in eight gallons of hot water, to which are added twenty-four gallons of cold water

Take twenty eight gallons of part 1 and add ten gallons of part No. 2, which forms an anilin black padding liquor suitable for the quantity of goods mentioned.

The anilin-black liquor is placed in the box of a foularding or padding machine containing a roller, which is below the level of the liquor, and a set of squeezing-rolls preferably covered with rubber and located above the liquor. The partially-dyed mixed goods are then run through the anilin liquor, passing under the roller and between the squeezing-rolls, and the goods on their passage through the box to the squeezing-rolls are padded with the anilin liquor, and the surplus liquor is squeezed out by the said rolls The goods padded with the anilin-black liquor are then dried, which may be effected by passing them over hot drying-cans or through a hot flue of any suitable or usual construction After the goods padded with the anilin-black liquor have been dried, they are run through an anilinager, where they are subjected to the action of steam, preferably from two and one-half to three and one-half minutes, to oxidize the anilin-black and develop it in the cotton fiber of the mixed goods The length of time the goods are allowed to remain in the ager varies and depends on the composition of the anilin-black liquor, its concentration, and also the condition of the steam. Superior results are obtained by keeping the temperature of the steam near 220° to 225° Fahrenheit.

After the goods have been aged they are run through an open washing-machine, the first box of which contains a solution of bichromate of potash or soda, one or two ounces per gallon of water, preferably heated at 140° to 150° Fahrenheit, and then washed, soaped, washed in warm water and dried. Regular and superior results are said to be insured by keeping the anilin padding liquor at a constant low temperature, preferably about 40° to 50° Fahrenheit. Mixed goods dyed black as above described are characterized by the fastness of the black, both in the wool and in the cotton, to light, heat and perspiration, and also by the depth and bloom of the shade of the color and the non-impairing of the gloss and feel of the wool, and the strength of the cotton fiber. The black of the wool is not affected by the development of the black on the cotton and retains its original lustre, while the cotton fiber on the other hand is not injuriously affected during the wool-dyeing.

THE WOOL MARKET.

TORONTO.—Canadian fleece of every class is entirely sold out, and considerable wool has been imported and is finding a ready market. Mills are active and are supplying their wants from hand to mouth The anticipation is that Canadian wools will be much lower than last year. The wool market is considered to be in a healthy condition. We quote: Pure wool, from 20 to 22c., supers, 19 to 21c., extras, from 21 to 22c., B A, 28 to 32c

MONTREAL.—The wool market is strong, demand is light Manufacturers are very busy, working overtime most of them, so that they will be in the market very soon. Prices Capes range from 14½ to 16½c., according to quality and condition, Natal, 16½ to 18½c B.A., washed, 25 to 34c., scoured, 30 to 36c London wool sales closed with all merino wools 10 to 15 per cent. advance over the closing of December sales.

FABRIC ITEMS.

J McDonald, millinery, Arnprior, Ont., has assigned to J G Thompson.

W. J. Bradley, dry goods, Brockville, Ont., has compromised at 70 cents on the dollar Liabilities $9,000, chiefly in Montreal.

Halifax, N S., merchant tailors complain of the competition of British firms, which have agents in Nova Scotia who take measures and supply clothing from London and Glasgow.

Z. Paquet has given instructions to his solicitors to institute civil proceedings against his cashier, Charles Lavoie, now under arrest on a charge of robbing him The civil action is to recover six thousand dollars, the contention being that Lavoie's deficit has been going on for a long time past, and amounts to that sum.

Cornell, Sprea & Co., Winnipeg (Smith W. Cornell, Archie E. Sprea and Geo. Stott), wholesale clothing, shirts, vests, etc., 107 Princess street, have assigned to S A D Bertrand

R. B. McGregor, men's furnishings, St. Thomas, Ont., has assigned also. The business was established nearly three years ago For some time past he has been very unsatisfactory in payments.

Several more dry goods failures are reported from Montreal recently. One of them, that of L. H. Boisseau & Co., is quite considerable in extent, the liabilities reaching some $110,000, but it cannot be said that the failure was totally unexpected.

Lang & Kemp, Ottawa, dry goods men, are said to be in some embarrassment, and it is reported they have threatened to call on some of their creditors, with the view of getting an extension. They show a very fair surplus of $11,000 over liabilities of $28,000

J. W. Wallace, a dry goods dealer of Halifax, N.S., has found his business declining to such an extent as to be obliged to suspend, and has submitted an offer to creditors to pay 50 cents, in 4, 8 and 12 months. His general liabilities are $12,179, and there is accommodation paper to some $2,000.

A failure of some importance is that of Spittal & Co., dry goods dealers, London, Ont. The owner of the business was Mrs. M. N Spittal, wife of Robert S, who failed about four years ago. The liabilities are said to be $11,000 and nominal assets $10,000

Paquette & Michaud, Montreal, are insolvent. They claimed a fair surplus not long ago, but at a meeting of creditors held a few days ago the statement submitted showed a deficiency of some $7,000, on liabilities of $27,000. An offer of 50 cents, in payments spread over three years, was made, but declined by the great majority of creditors, and an investigation was ordered.

George Craig & Co., departmental store, Main street, Winnipeg, Man., made an assignment for the benefit of creditors, Feb. 2. Mr. Craig was the sole owner, and has been in the Prairie Province since 1882, and kept a good-looking store in Portage la Prairie four years before removing to Winnipeg in 1886. He is much esteemed, and his mistake appears to have been overtrading on his somewhat limited capital.

A meeting of the creditors of J. H. Doherty, clothier, Ottawa, was held in Montreal recently, when liabilities were shown at about $28,000. Mr. Doherty did not find it convenient to attend the meeting, and no settlement was reached. The failure has made a very unfavorable impression, especially in the face of Mr. Doherty's quite recent claims of a very considerable surplus, now resolved into a deficiency, and there is a probability of his examination before a judge.

The old established importing Quebec dry goods firm of Simons & Foulds was dissolved on 1st February, by expiry of time, Archibald Foulds retiring from the business. The house was founded nearly fifty years ago by John Simons, and has had an honorable, and, we believe, successful career The business is in future to be carried on under the name and style of Simons & Minguy, by Archibald Simons and Jean Minguy, who have been connected with the business for well nigh twenty years, and for the last five years have been partners in the firm

FAST COLORS ON CARPET YARN.

Alizarine Carmine Blue G and B (in paste), have been tried practically on carpet yarn with great success. In alizarine colors suitable for dying with these new colors, Alizarine Cyanine Green G extra is admirably suited, and which color in combination with Quinoline Yellow, produces bright and clear greens.

The following aniline colors combine well and produce shades much in demand by carpet dyers, viz.:—Azo Fuschine G, Azo Crimson L, Orange Y, Fast Yellow extra, Indian Yellow G and Quinoline Yellow.

Although the above colors dye remarkably even, they must be brought slowly to the boil, with usual precautions of entering goods into the tepid dye liquor.

Samples and prices of any of the above dyes will be forwarded on application to the Dominion Dyewood and Chemical Co., Toronto.

Among the Mills

Co-operation is one of the guiding principles of industry to-day It applies to newspapers as to everything else. Take a share in "The Canadian Journal of Fabrics" by contributing occasionally such items as may come to your knowledge, and receive as dividend an improved paper.

Aiken's tannery, Orangeville, Ont, was burned February 2nd Loss about $5,000.

The Cobourg Woolen Mills were bought at public auction by William Rosamond for $15,400.

The Shelburne, Ont. flax mill belonging to S T Fennell was burned last month Loss about $1,000.

Jas. H. Wylie, Almonte, Ont., has now got the old Baird woolen mill running full time About 25 hands are employed.

W. H. Wyman, manager Corticelli Silk Co., St John's Que., spent some time lately in visiting New York and Florence, Mass.

The Gillies Co.'s Woolen Mill, of Carleton Place, Ont., is now running overtime four nights a week, in order to keep up with orders.

There is talk of establishing a cotton factory at Three Rivers, Que., and the city council is taking active steps to secure some such industry for the town

The Continental Binder Twine Works, Brantford, Ont., have been closed down on account of the removal of the duty and the competition of prison labor.

The Napierville, Que, Woolen Mills, owned by A Merizzi, of that place, were destroyed by fire Jan 17th. The loss was about ten or twelve thousand dollars.

John J. Smith, late with the Almonte, Ont., Knitting Company, has gone to Alton, Ont., where he has taken an engagement in George W. Ward's knitting factory.

David Shepherd, who lately carried on a garnetting business in Almonte Ont., has moved to Chambly, Que., where he has secured a good situation as dyer in S. T. Willett's woolen mill.

The machinery from the Yarmouth, N.S., woolen mill has been removed to Oxford, N.S., Manufacturing Co 's premises, and will be used in the mill. The Yarmouth mill has been permanently closed.

An Ontario charter has been granted to I. B. Kleinert Rubber Company, a company incorporated under the laws of West Virginia, U S A, to manufacture in Ontario rubber goods, dress shields, ear muffs and other articles in the general line of wearing apparel.

M. B. Perine, the Doon, Ont., manufacturer, had a second stroke of paralysis early this month. He is now in a dangerous condition and with his weight of years—he is 83—the chances are against his recovery. He has been a most vigorous and active business man, and until lately has taken an interest in the work going on around him.

The annual general meeting of the shareholders of the Merchants Cotton Company was held February 8th. The report presented was considered satisfactory, and the following were elected officers for the ensuing year, A. A. Ayer, president, Gilman Cheney, vice-president, directors, Robert Mackay, J. P. Cleghorn, Jonathan Hodgson, R. B. Angus, James Crathern, secretary-treasurer, Wm. G. Cheney.

The Winchester, Ont., *Press* tells of a new sort of "pulled wool," or rather sheep, which was killed in that vicinity recently in a rather peculiar manner. The animal ran under the connecting rod of a threshing machine. The wool caught on the rod and wound round it, throwing the sheep with such force as to do considerable damage to a new fanning mill that was standing near. In addition to that the hide was stripped completely off the animal.

The Berlin Felt Boot Company is busy manufacturing a large amount of Klondyke supplies.

The Dominion Carpet Company, Elora, Ont., is said to be looking for inducements to move to Orillia.

The St. Lawrence Blanket Co, Gananoque, Ont., has an order for miners blankets from Victoria, B C., that will keep it running full for some time.

Cornwall, Ont., offered the Toronto Rubber Co. a site with 400 h.p. water-power, and a building to cost $10,000, to move their plant there from Port Dalhousie.

A. R. Burrows, New Hamburg, Ont., recently asked the Berlin, Ont., council for $600 to assist his brother's starting a carpet factory in that town. The application was refused.

R. W. Watchorn, of Watchorn & Co., woolen manufacturers, Merrickville, Ont., has gone to Charlotte, S.C., to look after his interest in his southern business.

D. W. Sherriff, recently boss weaver in the Hawthorne Woolen Mills, Carleton Place, Ont., left a short time ago for Connecticut, where he has accepted a position in one of the large mills.

Improvements are being made on the premises of the Dominion Cotton Company's Kingston mill. The company is making arrangements so that their property will have good fire protection.

The Royal Pulp and Paper Co., of East Angus, Que., are putting up a new mill to replace the one burnt last summer. The new mill is nearly complete and will have a much increased capacity.

John Foote, manager of the Dominion Cotton Co.'s mill, Kingston, Ont, has resigned his position, in view of difference which had arisen between himself and the general superintendent at Montreal. R. Walsh, boss weaver, has also retired.

The Dufferin Hosiery Co., Shelburne, Ont., write that they are still in the market for a one-set custom mill, as they have not yet succeeded in procuring one. They prefer the north or northwest as a location. The company find their trade increasing, and will have more machines during the coming season than before.

In a recent issue of the *North-West Gazette* the Qu'Appelle, Ass., Felt Boot Company, Limited, gives notice of application for letters patent. The object for which incorporation is sought is the manufacture and sale of felt and its manufactures, whether wholly composed or made up of felt or otherwise, and the tanning and sale of sheepskins. The chief place of business of the company is at Qu'Appelle. The proposed amount of capital stock is $15,000, in six hundred shares of $25 each. S. H. Caswell, J H McCaul, J. A Cowan, B. Harvey, and C. F. Musgrove, are the provisional directors.

An agreement has been reached between the Toronto Rubber Company and the Hull, Que., city council in regard to the company removing their factory to Hull. In return for a bonus of $30,000 and fifteen years' exemption from municipal taxation on their improvements, the company agrees to establish a factory within the limits of the city and expend on the building alone, exclusive of the water-power and machinery, $30,000. They also agree to expend an average of $75,000 per annum in wages, not including the salaries of office hands, and that within a year all the employees shall live in Hull. The bonus will not be paid until the factory is in operation.

The Publishers of the "Canadian Journal of Fabrics" will give one year's subscription FREE to the first three subscribers who forward to the Toronto office, 62 Church Street, perfect copies of the issue of January, 1897.

Wool Washers
Dryers and Carbonizers
KITSON - - - MACHINE CO.
LOWELL, MASS.

Farnham, Que., is moving to secure the removal of the Waterloo, Que., knitting mills to that place. The inducement held out is a bonus.

The first utilization of the works of the Keewatin Power Company, that two years ago finished a $300,000 dam at the outlet to the Lake of the Woods, Rat Portage, Ont., will be undertaken the coming spring in the erection of a large paper pulp mill, to be one of the largest in America.

The Fergusiea, Ont., one-set woolen mill is to be sold at auction, Feb. 24th. The property has a water power, about 60 h.p., and a steam plant of 25 h.p. It is three miles from Renfrew, Ont., and within a quarter of a mile from Opeongo Station, K. & P. Ry.

B J. Gosling was presented by the office staff and overseers of the Montmorency, Que., Cotton Company with a handsome pair of diamond sleeve links on the occasion of his leaving to take a position in the Dominion Cotton Mills He was also presented with a silver tea urn from Court Montmorency, I.O.F.

Mr. Allendorf, carpet weaver, Hespeler, Ont., was eighty-one years of age recently. He came to Hespeler, then New Hope, fifty-five years ago, and has seen the village rise from a mere settlement in the bush to the important manufacturing centre it now is. The Guelph *Mercury* wishes Mr Allendorf the enjoyment for years to come of the quiet evening of a well spent life.

The directors of the Niagara Falls Power Co. recently authorized two leases of land and power, thus practically announcing the coming to the Falls of two more industries. One of these is known to be a carpet and lace factory, backed by influential firms which have English, Canadian and American connections.——And still there is nothing but flower beds on the Canadian side.

Ex-Manager Foote, of the Dominion Cotton Co.'s Mill, Kingston, Ont., is making preparations to leave that city. He was in the cotton mill business for 3½ years at Hyderabad, Deccan, India, for 9 years at Windsor, N.S., for 4½ years at St. Ann's, Montreal, Que., and for a little over 2 years in Kingston. He will go to Windsor, N.S., where he will sell his property, previous to going to Marpley, England, where he and his wife will live a retired life.

The Moseley Shoe Leather Company, which received a grant of twenty thousand dollars from the city of St. Henri, Que., in consideration of building and operating a factory in that place, will commence manufacturing shortly. The new factory, a substantial brick structure of two stories, situated on the canal bank near St. Augustin street, is now ready for occupation, and the plant has been put in. The bonus voted by the city will be handed over to the company as soon as the necessary documents are completed.

Business is booming at the Osgoode Glove Works, Galt, Ont. Orders have been coming in so rapidly that the proprietor has been forced to secure larger premises, and has succeeded in renting the building lately occupied by the Hepburn Shoe Company, into which the machinery will be moved. Mr Osgoode has just purchased twelve new stitching machines, and is advertising for several more hands. A Klondyke mit is now being manufactured at the works, for which large orders are being received

An Ontario charter has been granted to W. H. Peterson, Dundalk, Ont.; E. Mountcastle, T. Bolen, S. McDowell, Melancthon; C. Johnston, J. Russell, Proton, Ont., as the Dundalk Woolen Mills Company, Limited, to manufacture, sell and deal in wool and in woolen and dry goods, with a total capital stock of twenty thousand dollars.

The annual meeting of the Winger Woolen and Felt Company, Elmira, Ont., was held January 20th, following postponement from 18th ult. The secretary read the annual report, which showed that between $6,000 and $7,000 was paid out in wages, and between 25 and 30 hands were employed in the factory. It was decided to push the felt business more particularly, and some very fine new lines of felt slippers will be got out for the trade next fall. The company have now three travelers on the road, viz., J. B. Winger, A. Crane, and Mr. Merner, who travels in Manitoba. Another one will probably be appointed for the Lower Provinces. The following officers were elected: J. Peel, general manager; A. H. Erb, president; Henry Winger, vice-president; D. Ratz, J. P. Luckhart and Casper Ziegler, directors.

The United Alkali Company, of Liverpool, England, last month bought the McGraw saw mill at Bay City, Mich., and will immediately begin the erection of a million-dollar plant for the manufacture of lower grades of alkalies. This will give the company two plants in Michigan. The first to begin operations will be that at Detroit, the buildings of which are nearly completed. The Bay City plant will cover 90 acres, will employ fifteen hundred men, and will consume the product of one coal mine and the product of 16 big salt wells. An Indiana plate-glass plant will be moved to Bay City, and will be run in connection with the alkali plant. Canada should establish such industries to utilize her great natural resources.

At the annual meeting of the Montreal Cotton Company, the by-law authorizing the issue of $300,000 worth of coupon bonds was passed. These bonds are to be secured upon the immovable property of the company, and the funds will be used to construct extensions to the plant. It is said to be the intention of the company to build a spinning mill, which will be utilized for the manufacture of goods at present imported into Canada. For instance, fine yarns and sateens of a superior quality will be turned out. The annual statement shows a desirable increase in the business. During 1896 the sales were $200,000 in excess of the previous year. A. F. Gault, the president of the company, presided, and the old board of directors was re-elected. They consist of A. F. Gault, president; Charles Garth, vice-president; Jacques Grenier, S. H Ewing, J K. Ward, R. R. Stevenson and Samuel Finley.

HAND-MADE AND CHENILLE AXMINSTERS.

Old-style hand-made Axminsters were first manufactured by Thomas Whitty, who established a factory for the purpose at Axminster, in 1755. When Mr. Whitty failed in business some years later the industry was transferred to Wilton, where a factory for the manufacture of the goods is still in operation. In 1833 Templeton, a manufacturer of chenille shawls at Paisley, Scot., conceived the idea that the process of making these shawls

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might be applied in the manufacture of Axminster carpets, and this was the origin of the Templeton chenille Axminsters, which are now produced in the factory of Templeton and Co., Glasgow. This firm are also extensive manufacturers of machine-made Axminsters. In the weaving of the old-fashioned hand-made Axminsters the carpet is made in one piece on a loom which consists substantially of a large wooden roller or winch, about two feet six inches in diameter, and some 20 feet long, pinned at the ends to two uprights. These uprights are joined *together by a beam some four or five feet above the roller, and* of course parallel to it. The long warp threads of the carpet are passed over this beam and separated from one another by little pins or studs in the beam. The strong linen threads comprising this warp are fixed to the roller at one end, the other end being also secured.

The girls who do the weaving sit beside one another on a long bench in front of the loom, each girl having a certain width of carpet to weave. She has first to fix the pile to the warp strands, and then to weave the strands into a solid backing. Beside her, so that her left hand can reach them, hang a number of short lengths of wool of various colors. In front of her is pinned the colored paper pattern which she is to reproduce in the carpet. Guided by her pattern she takes the appropriate piece of wool, ties it tightly on to the warp strand, and then, with a pair of scissors, snips off the two ends of the knot within about an inch of the strand. In this way the two woolen tufts are left standing out from the warp, and by placing a succession of them side by side the thick pile of the carpet is gradually built up. When one row of tufts is completed, a shuttle carrying strong threads is passed once backward and once forward between the strands, thus interweaving warp and tufts. Then comes another row of tufts, and the passing of the shuttle as before, and so on until the carpet is finished. Each tuft of the pile goes through the very back of the carpet, so that real Axminster cannot become threadbare until it is worn entirely through.

The process of manufacture is slow, and the thick heavy pile calls for a great amount of wool, consequently real Axminster carpets are extremely expensive. The demand for them, as with Aubusson and Savonnerie carpets, comes from quarters where more importance is attached to quality than price—large and fashionable hotels, club-houses, royal palaces, and houses of the rich. The floor coverings known as Berlin carpets are similar to Axminsters. They are made in Germany, and also at a factory in Morrisania, New York city. In the machine-made chenille Axminsters, the chenille is first woven so as to form a double fringe of colored yarn with a fine thread running along the centre to keep the thread lengths of wool taut. This fabric is then cut into strips each of which is bound into a V-shape, so that the double fringe becomes a series of thick tufts of wool side by side, and firmly held together by the binding thread. This chenille is then ready to serve as the weft of the carpet fabric, being laid across the warp threads and woven into place in the hand-loom, which is used for all chenille Axminsters wider than 27 inches.—*Carpet Trade Review.*

CHEMICALS AND DYESTUFFS.

During the month past, the chemical and dyestuff market has remained in practically the same condition, and we quote last month's prices. The following are current quotations in Montreal:—

Bleaching powder	$ 2 00	to	$ 2 10
Bicarb. soda	2 25	"	2 30
Sal soda	0 75	"	0 80
Carbolic acid, 1 lb. bottles	0 35	"	0 37
Caustic soda, 60°	1 80	"	1 90
Caustic soda, 70°	2 25	"	2 35
Chlorate of potash	0 12	"	0 15
Alum	1 35	"	1 50
Copperas	0 70	"	0 75
Sulphur flour	1 75	"	2 00
Sulphur roll	1 75	"	2 00
Sulphate of copper	5 00	"	6 00
White sugar of lead	0 07	"	0 08
Bich. potash	0 10	"	0 11
Sumac, Sicily, per ton	50 00	"	55 00
Soda ash, 48° to 58°	1 25	"	1 50
Chip logwood	1 90	"	2 10
Castor oil	0 10	"	0 12
Cocoanut oil	0 06½	"	0 07

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A responsible firm of manufacturers' agents in St. Johns will be glad to hear of two or three leading manufacturers in the textile and kindred trades who wish to be represented in Newfoundland. "Address S. & S., care of Canadian Journal of Fabrics," 62 Church Street, Toronto.

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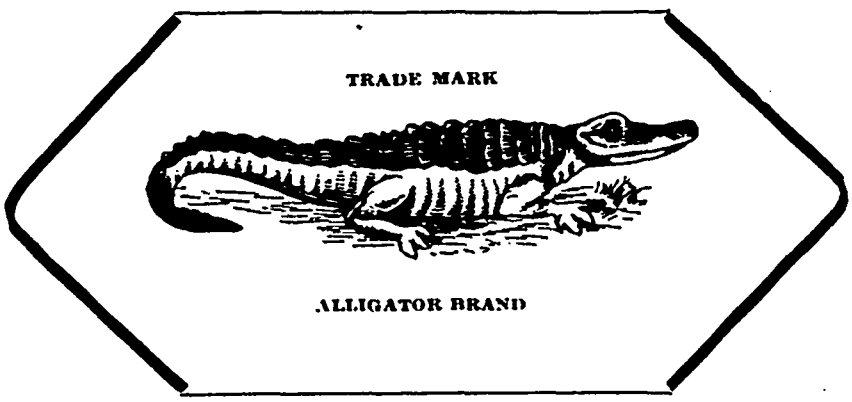

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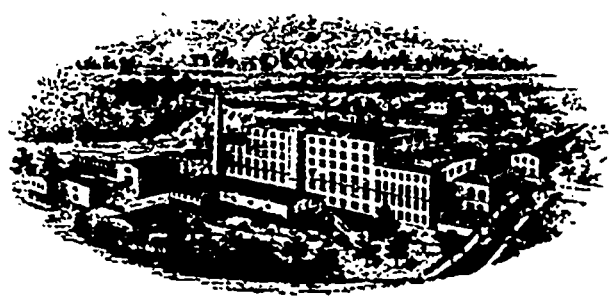

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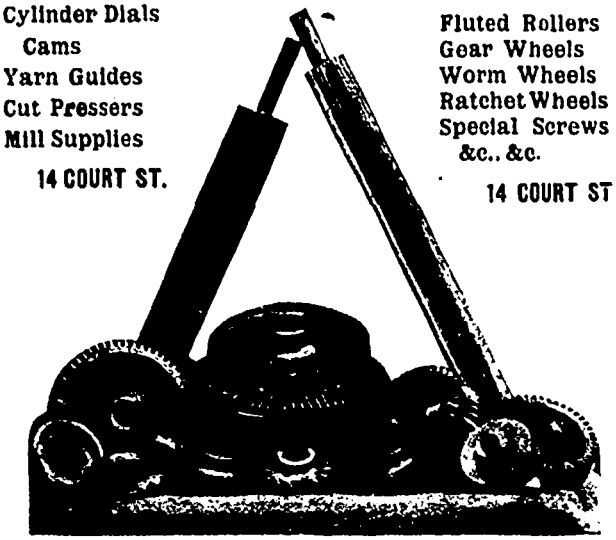

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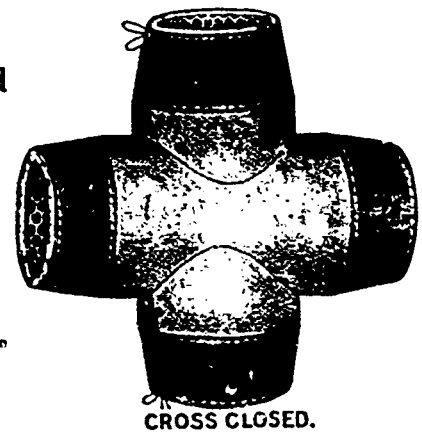

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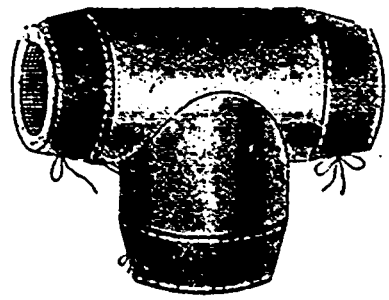

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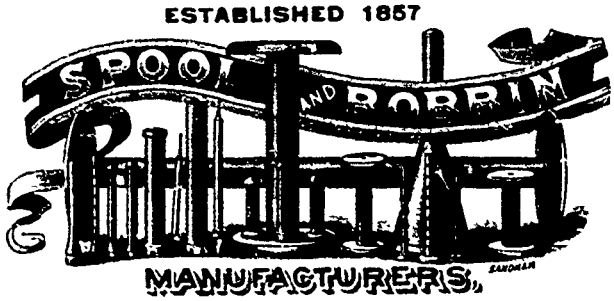

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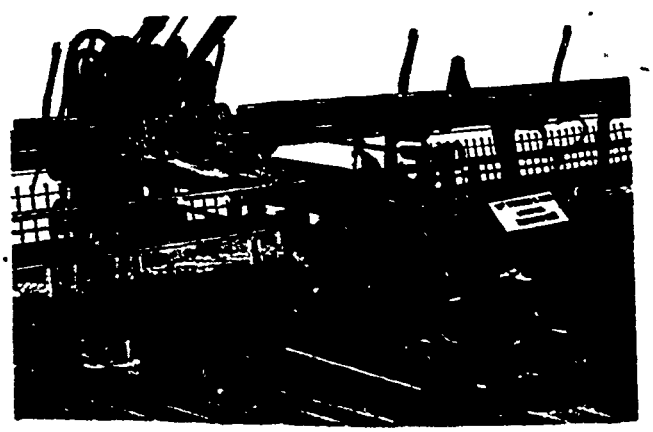

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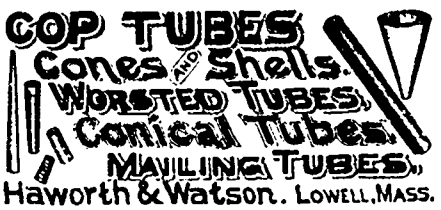

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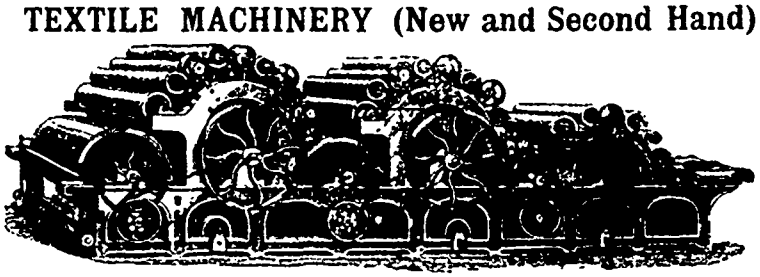

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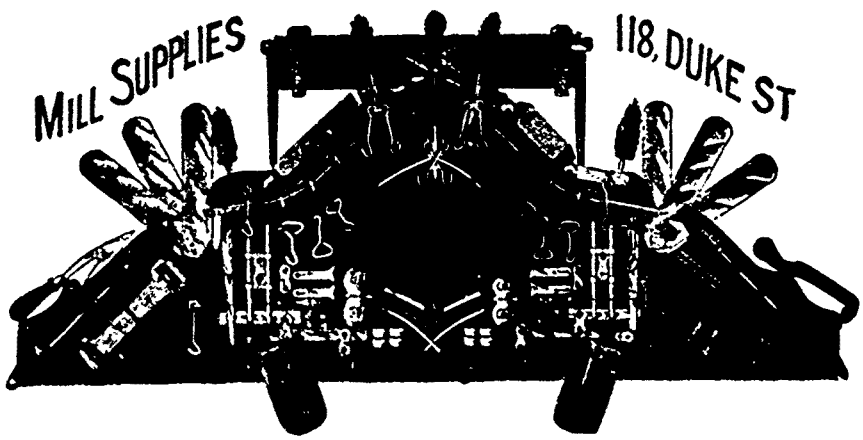

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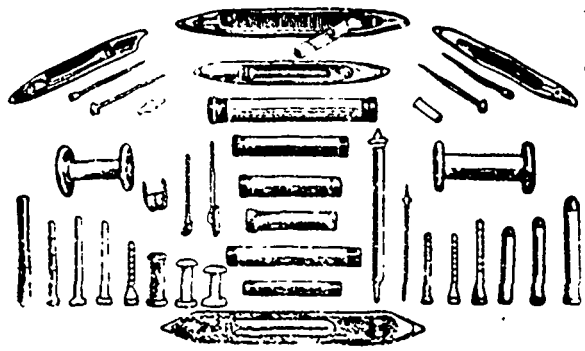

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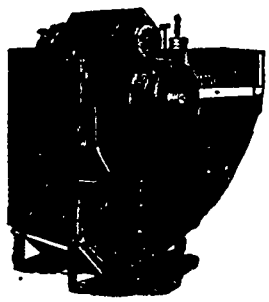

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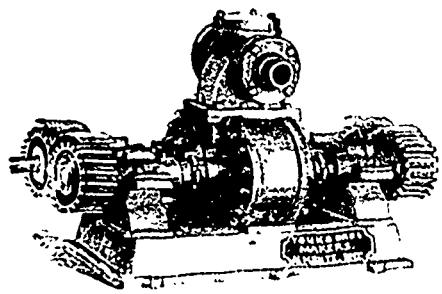

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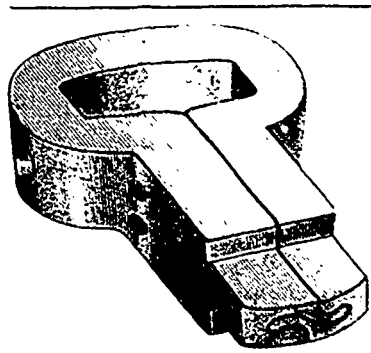

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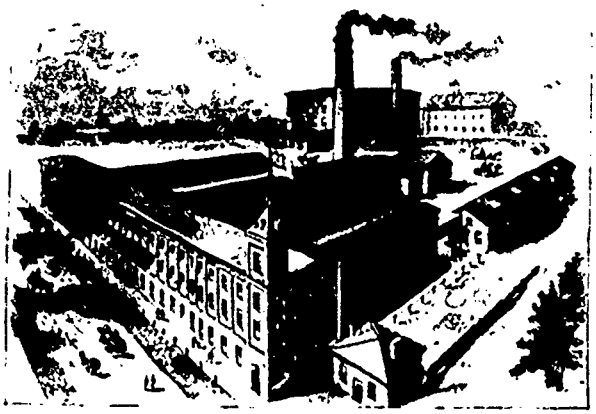

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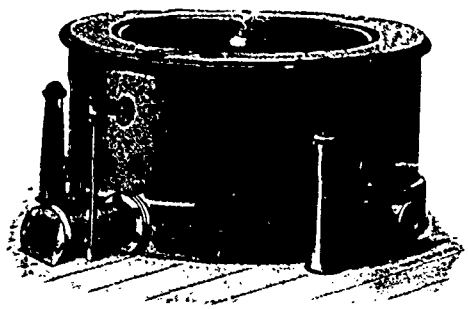

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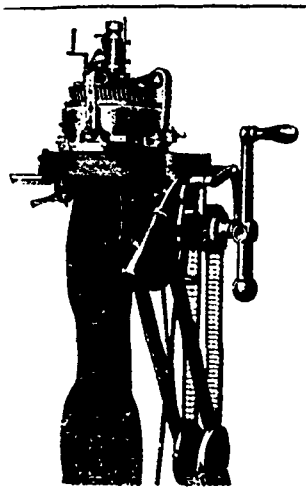

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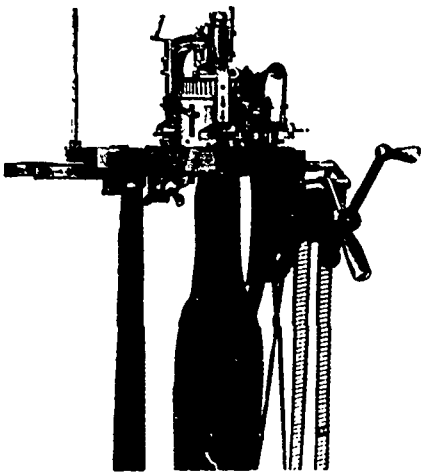

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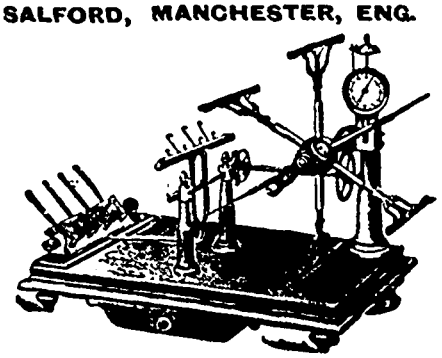

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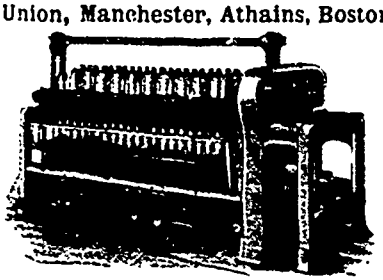

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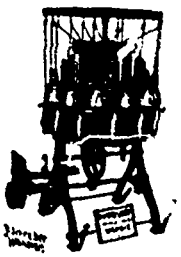

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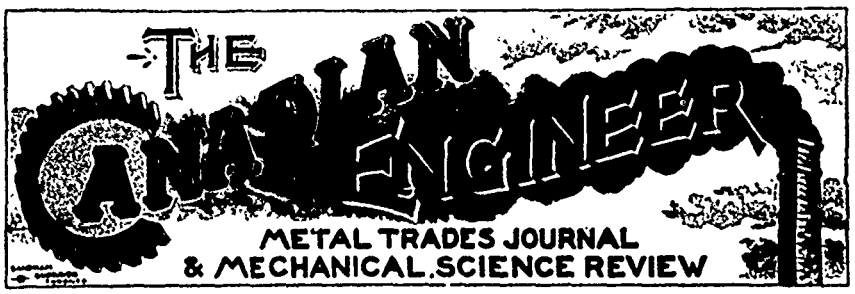

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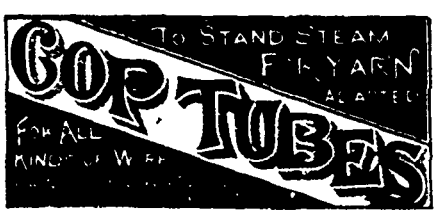

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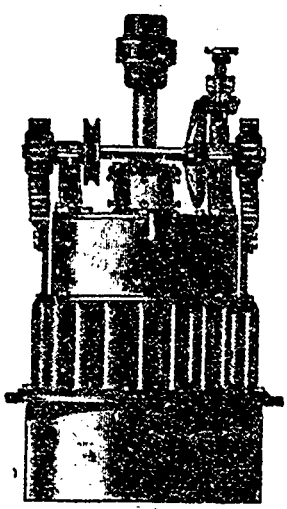

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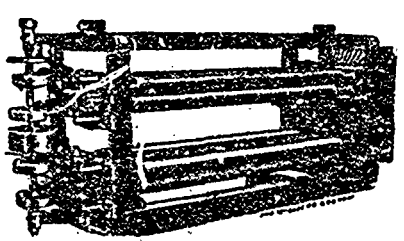

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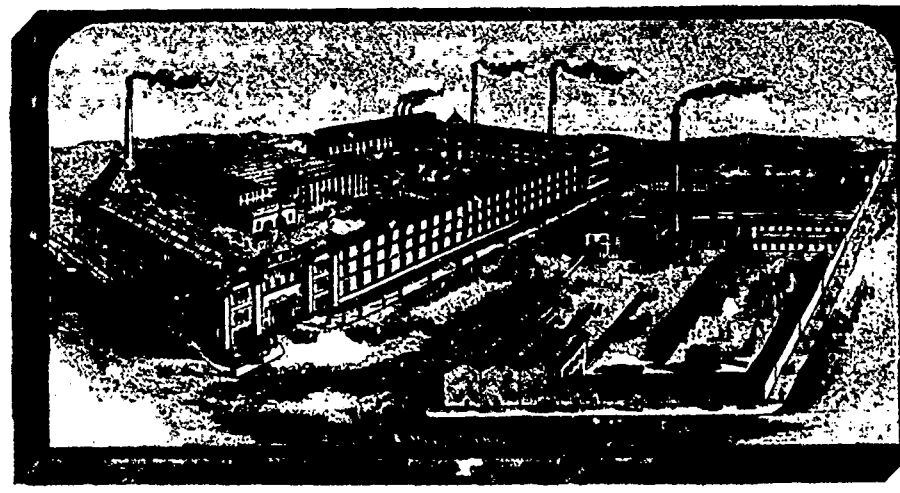

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